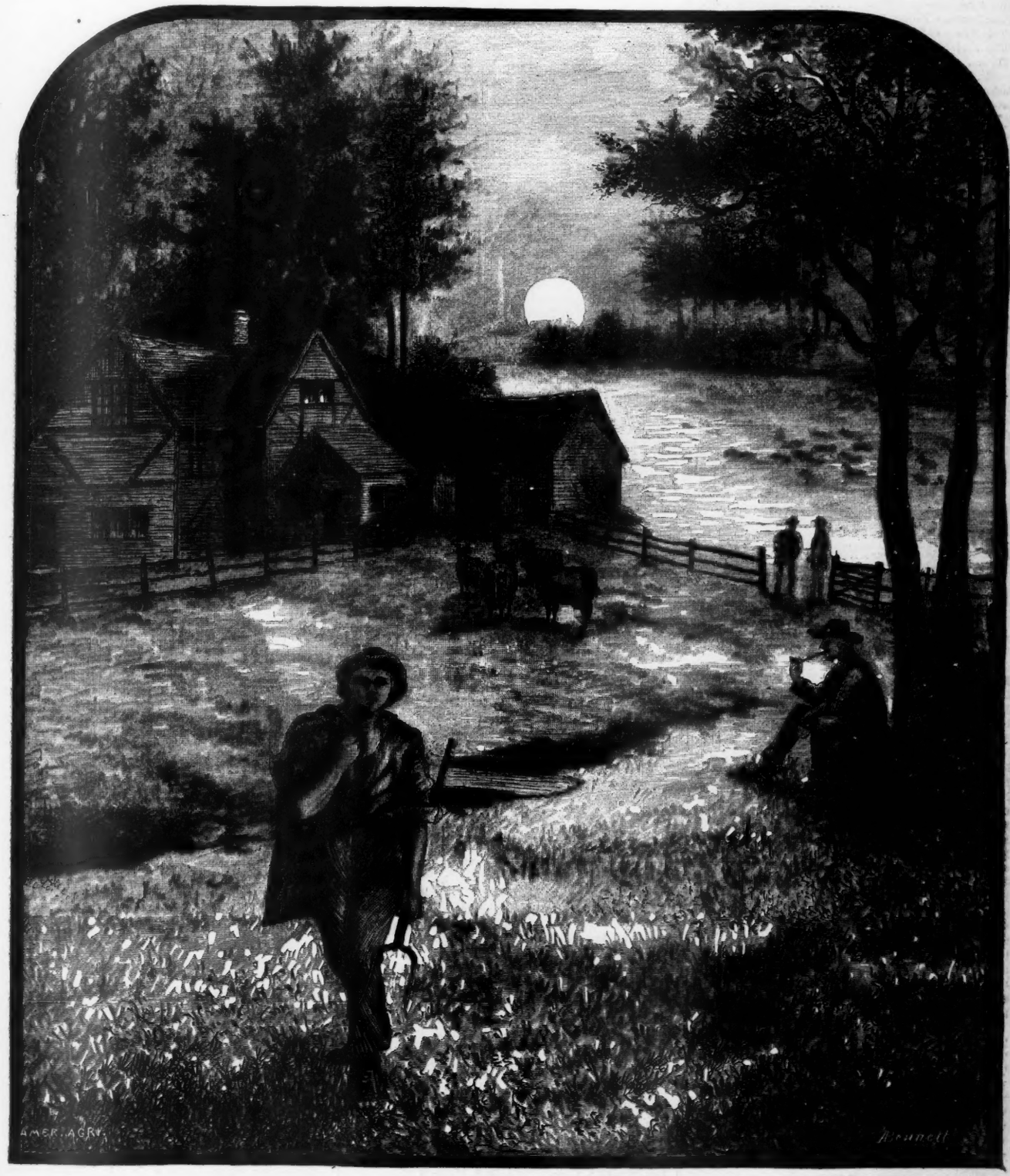
AMERICAN AGRICULTURIST

FOR THE

FARM · GARDEN · & · HOUSEHOLD

"AGRICULTURE IS THE MOST HEALTHFUL, MOST USEFUL, AND MOST NOBLE EMPLOYMENT OF MAN."—WASHINGTON.

VOLUME XLIII.—No. 8. NEW YORK, AUGUST, 1884. NEW SERIES—No. 451.



The Harvest Moon—"Moon of the summer night."—LONGFELLOW.

Drawn and Engraved for the American Agriculturist.—*(See next page.)*

COPYRIGHT, 1884, BY ORANGE JUDD COMPANY.

ENTERED AT THE POST OFFICE AT NEW YORK, N. Y., AS SECOND CLASS MATTER.

Contents of this Number.

Among the Farmers 332
Animals, Feeding, and Care of Farm 328
Animal Ailments 324
August Days 318
Australian Wool Farming ... 9 *Illustrations* .330-331
Bee Notes for August ..... *Illustrated*.. 320
Boys' and Girls' Columns:
An Adventure with Bruin ..... *Illustrated*.. 342
The Doctor's Talks ..... 5 *Illustrations*.. 343
Tree Toads or Tree Frogs ..... 2 *Illustrations*.. 344
The Floral Wedding 344
Rebus ..... *Illustrated*.. 344
Breeds, The Rival Beef 335
Bucket, A Bored Well ..... *Illustrated*.. 326
Cabbage Fly and its Relatives ..... *Illustrated*.. 327
Cats on the Farm 328
Cattle, Guernsey ..... 2 *Illustrations*.. 321
Cattle for the South 335
Cellars, Above-ground 324
Celery, Should Farmers Grow 338
Celery, A New, The "White Plume." ..... *Illustrated*.. 319
Chat with Readers 325
Chenille, Floral—Sprague ..... *Illustrated*.. 337
Chicks, Hurrying the 324
Corn-House and Granary ..... 5 *Illustrations* 333
Corn, How, is Hybridized? 325
Dog Law 326
Fairs, Our List of 324
Farm Work for the Month ..... *Illustrated*.. 318
Fishery Commission, The New York ..... *Illustrated*.. 327
Fruit Harvest, The 339
Fruit Picker, A Home-Made 325
Garden, Flower and Lawn 319
Garden, Kitchen and Market 319
Grape Vine, Summer Pruning the 338
Greenhouse and Window Plants 319
Grounds Irregular, The Management of ..... 3 *Ills*.. 339
Hens, Egg Eating ..... *Illustrated*.. 322
Hens Picking Feathers 335
Horse Breeding, Valuable Points in 335
Horses, Do not Gall the 328
Horses, How and When to Shoe 332
Horses, Sloping Shoulders in Draft ..... 2 *Ills*.. 335
House, A, for $100 ..... 3 *Illustrations*.. 329
Household.
A Bedroom in Cretonne ..... *Illustrated*.. 340
Hanging Shelves 340
Notes on Present Styles of Dress 340
Hanging a Broom ..... *Illustrated*.. 340
A Flour and Meal Closet ..... *Illustrated*.. 340
The Hands 340
A Laundry Cushion ..... *Illustrated*.. 341
A Word to Parents 341
The Buffalo Moth 341
Light Work in Mid-Summer ..... 3 *Illustrations*.. 341
A Lead Pencil Sharpener 341
Insect, A Curious 324
Insects, Enemy to Maple Trees ..... *Illustrated*.. 322
Lady Birds and their Larvæ ..... *Illustrated*.. 337
Leaves, Variations in the, of Trees ..... 4 *Ills*.. 338
Melons for Market 320
Money-Crop for Next Spring 329
Moon, The Harvest ..... *Illustration*.. 317
Notes from the Pines ..... *Illustrated*.. 336
Notes on Live Stock 318
Orchard and Fruit Garden 319
Pecan Nut—Its Cultivation 339
Plow Plank, A ..... *Illustrated*.. 326
Potatoes, Save the 336
Quince, Improvement in the—Meech's Prolific.. *Ills*.. 328
Rats and Flies 324
Rose-bugs and Roses 324
Salt upon Animals, Effect of 324
Silk-worm Cocoonery, A ..... *Illustrated*.. 323
Snow Plant of the Sierra Nevada ..... *Illustrated*.. 336
Strawberry, A good, Coming—The "Banquet".. *Ill*.. 323
Strawberries, Fertilizer for 324
Stump—Saltpetre and Kerosene 325
Stumps, Removing 332
Sugar from Sorghum, A New Process of Extracting. 2 *Illustrations* 320
Timber, The Best Time to Cut 333
Toads, Do They do Harm? 324
Tomatoes and Cancer 324
Walks and Talks on the Farm 334
Water Cresses 324
Weeds, Kill the Late 326
Weevel, A New and Serious Strawberry ..... *Ill*.. 323
Wheat, Getting Ready to Sow 319
Wire Tightener, A ..... *Illustrated*.. 326

For Humbug exposures, book reviews, business announcements, and other matters of special interest, see the last pages of this number of the Am. Agriculturist.

August Days.

'Tis summer prime, when the noiseless air
In perfumed chalice lies,
And the bee goes by with a lazy hum,
Beneath the sleeping skies:
When the brook is low, and the ripples bright,
As down the stream they go,
The pebbles are dry on the upper side,
And dark and wet below.

MRS. E. OAKES SMITH.

The Harvest Moon.

Husbandmen in ancient times looked upon the "unusual behavior" of the Harvest Moon, as due to a Divine dispensation in their favor, for the purpose of affording them abundant light to enable them to complete the labors of the harvest. At other times the moon rises about forty-eight minutes later than it did on the previous night, but the harvest moon rises nearly at sunset, and at about the same time for several evenings in succession. The astronomers dispose of the belief of the ancient farmers, that it was a dispensation for their special benefit, by showing that so long as the motions of the earth and the moon are as at present, the latter cannot help rising in such a manner as to produce the harvest moon. The influence of the moon in various worldly affairs has been a matter of common belief from very early times, and there are still those who sow seeds, cut timber, kill pigs, etc., at a certain time of the moon. The rural population of England have several fancies regarding the harvest moon; among others, that it is the proper time for maidens to learn of their future through dreams. The harvest moon dreams should surely be favorable, as they require no little trouble in the way of preparation for them. The lass who would learn what the future has in store for her in the way of matrimony, must open a prayer book at the marriage service, and finding the words: "With this ring I thee wed," places upon them a ring, a key, a flower, and a sprig of willow; besides these, bread, cake, and other things, including cards, are laid in the book, which is wrapped in muslin and placed under the pillow. If she dreams of a ring, marriage will follow; if of willow, her lover will be treacherous, and there is a proper interpretation for whatever may be the subject of the dream. Should a goose be dreamed of, the unfortunate dreamer will marry more than once. Though the farmer in former times was grateful for the harvest moon, as it prolonged his working day, the farmer of to-day does not need her light for this purpose. Thanks to modern inventions, the days of the harvest are abundantly long for their lessened labors. Instead of taking a practical work-day view of the harvest moon, he can, with grateful heart for abundant crops, give himself up to a full enjoyment of the scene, when

"A dewy freshness fills the silent air;
No mist obscures, nor cloud, nor speck, nor stain,
Breaks the serene of heaven:
In full orbed glory, yonder moon divine
Rolls through the dark-blue depths."

We now make to Agents and Canvassers the same request previously made to subscribers, viz.: that they immediately forward us any autograph letters, any documents with the ear-marks—or any printed matter whatsoever, received by them, indicating that there may have been an organized conspiracy to dishonorably or dishonestly appropriate the subscription list and good-will of this Company.

Writers for the August American Agriculturist.

Joseph Harris, N. Y.	Andrew S. Fuller, N. J.
Dr. George Thurber, N. J.	Dr. B. D. Halsted, N. J.
W. Z. Hutchinson, Mich.	Col. M. C. Weld, N. J.
H. DeB. Schenck, Mass.	Rev. E. P. Roe, N. Y.
Dr. D. D. Slade, Mass.	Cyril Marr, Cal.
J. R. Hawkins, N. Y.	Alfred Trumble, N. Y.
M. J. G. Hammack, Ill.	J. S. Galloway, O.
A. A. Eaton, Pa.	F. D. Coburn, Kas.
H. W. Pond, N. Y.	B. W. Jones, Va.
T. L. Price, Cal.	J. C. Wilson, Tenn.
H. A. Haigh, Mich.	Geo. Folsom, Pa.
Rev. Wm. Clift, Conn.	R. S. Welsh, N. Y.
Robert B. Roosevelt, N. Y.	Ethel Stone, N. J.
W. W. Meech, N. J.	L. A. Beatty, Ill.
J. M. Stahl, Mo.	Mary Hadleih, Miss.
Frederick Grundy, Ill.	Lisle Lester, Cal.
W. D. Boynton, Wis.	B. Haymond, W. Va.

See page 350 for items of special interest.

Act.
Think.
Consult.
Experiment.
Make repairs.
Carry a note book.
Watch the markets.
Favor the seed-corn hills.
Manure the back fields!
Keep up the flow of milk.
Make repairs in spare hours.
Superior work pays us the best.
Above all things avoid foul seed.
Gas lime should not be used fresh.
Idle land is the weeds' opportunity.
Fowls profit by a run in the stubble.
Wheat after oats is a faulty practice.
Whitewash will cleanse and sweeten.
August pigs make holiday small pork.
Do not let your insurance policy expire.
The damages by rats exceed those by fire.
Sow white turnip seed for fine fall fodder.
Wash the horses feet and legs every night.
Success is largely a matter of small details.
Roll the ground before and not after seeding.
Good seed and good soil are a good beginning.
Farm animals well summered are half wintered.
Help out the dried up pastures with green fodder.

Thinning the root crops means more tons to the acre.

Clean, oil, and store all the implements no longer in use.

Get out the year's supply of muck while the beds are dry.

Build temporary pasture shelter in airy parts of the fields.

Weeds when they go to seed curse the land that grew them.

The general purpose animal is superior only in its versatility.

Let the bumble bees live and thus increase the yield of clover seed.

A drain to be a profitable investment must be a permanent improvement.

Fall fallowing cleans the land and brings it into fine condition for spring crops.

Neglected fence rows are like a leaden weight upon the neck of clean field culture.

A farmer's bank account may grow at the expense of his manure heap and grain crops.

A clean, cool, ventilated stable, free from flies, is a suitable lodging for the tired work horse.

The possibilities of a farm are measured by the quantity and quality of brains which run it.

Amid all the toil of midsummer, do not forget to do a little careful work for the coming county fair.

Superior pork made from freshly fallen wormy apples is very cleansing to an insect-infested orchard.

A root crop is very humble, but as a foundation for a judicious rotation it will support the symmetrical superstructure of profitable mixed farming.

Orchard and Fruit Garden.

Decide whether to dispose of surplus and inferior fruit, by making it into vinegar, or by drying or evaporating it.....Trees will be broken by careless pickers; saw off all injured limbs....The Apple-worm may be diminished by picking up and destroying fallen fruit, or allowing the pigs to do it. ....Bands of carpet, bagging, or other fabric, fastened around the trunks of apple trees with a single long tack, will catch many Apple-worms. Examine weekly and kill....If trees set last spring suffer from drouth, mulch them, or keep the soil loose. ....The Fall Web-worm spins its nest in summer also. At its first appearance, cut away the twig to which the nest is attached, and crush the worms. ....Young trees may have their shape controlled by pinching the ends of shoots that grow too vigorously....When the Blackberry and Raspberry crops are off, cut away the canes that have borne fruit. The new stems of Blackberries should be stopped when five feet high, those of Raspberries at three or four feet....Keep strawberry beds free of weeds. Plant new beds with plants rooted in pots....Whitish spots on the underside of grape leaves are mildew. Dust sulphur, with a sulphur-bellows at once. Large caterpillars and beetles must be hand-picked. Continue to pinch laterals.

Market and Kitchen Garden.

The hotter and drier the weather, the faster the "pussley" grows. Hoe up and feed it to the pigs. ....Vegetables for market should be put up neatly. Beets and other roots must be washed and tied in bunches....Plant Bush-beans for late crops. Pinch off the ends of the vines of Limas when they reach the tops of the poles.....Beets, carrots, and other roots should be hoed until the tops prevent....The fodder from sweet-corn may be greatly increased by cutting up the stalks as soon as the ears are gathered. Cultivate well.....Gather Cucumbers for pickles as soon as they are of the desired size. ....Keep the fruit of Egg-plants from the ground with a wisp of straw or hay....As Melons approach maturity, turn to secure even ripening.....Do not allow Sweet-potato vines to take root at the joints; move them at each hoeing....Onions are known to be ripe when a large share of the tops fall over. Pull, dry thoroughly, cut off the tops, and sell, or store in a dry, cool place, spreading thinly....Cultivate and hoe among the Squashes as long as the vines will allow. Permit the vines to take root at the joints.....Late Cabbages and Cauliflowers need to be kept free from weeds.....Turnips are to be sown; the ground from which the early potatoes were removed is excellent for them. Sow Rutabagas early this month, and the Aberdeen and Yellow Stone any time before September first....Tomatoes, foliage, stems, and fruit are devoured by a large green worm or caterpillar, which can neither bite nor sting, despite its horn. Wherever its abundant droppings are seen on the ground, hunt on the vine for the worm. Keep the vines tied up to the trellis, and cut away all badly shaped fruit.

Flower Garden and Lawn.

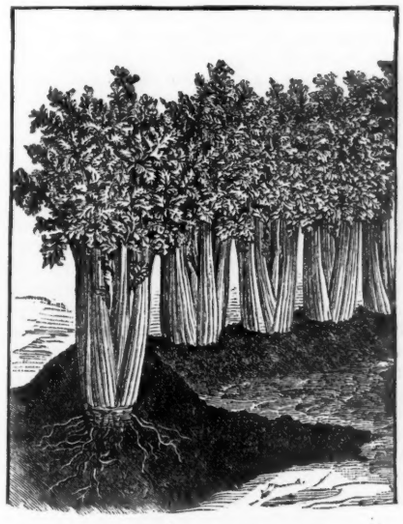
Do not mow the lawn too often in hot and dry weather. Keep the margins of beds, cut in lawns, well defined. Run a sharp spade into the soil, along the margins of the beds, to cut off grass roots....Ribbon or other beds planted in designs, need care to keep the lines between the kinds of plants distinct, and all at a uniform hight; this may be done by pinching and the use of the knife. ....Sticks and strings will be needed by Dahlias, Gladiolus, and other tall plants. Keep the supports out of sight....Remove flowers and flower-clusters as soon as they begin to fade, unless seeds are to be saved....As soon as flowers on the summer-blooming roses fall, cut back the shoot to a strong bud ...Chrysanthemums should be brought into shape by pinching. When buds are formed, pot those intended for house-blooming. Look out for caterpillars and plant-lice....Lilies, especially the tall growers, may need stakes. If thin spots appear on the leaves, a caterpillar will be found on the under side. If seeds are not wanted, cut away the young pods....Carnations, to bloom in winter, should have flower stems cut away as they appear.

Greenhouse and Window Plants.

Paint, glaze, and repair the greenhouses....Secure pots, soil, sand, moss, and whatever else may be needed for winter use....Care for the plants in pots out of doors as directed in former months. ....Make cuttings of plants that were turned into the open ground....Camellias and other plants with thick leaves must not be exposed to the full sun. Fumigate house plants with tobacco smoke.

A New Celery.—The "White Plume."

No other agencies have done so much to popularize celery culture and make it profitable, as this periodical. Some twenty years ago, in the pages of the *American Agriculturist*, and soon after in our volume, "Gardening for Profit," by Peter Henderson, were first made known the improved methods of raising celery and keeping it, practised by the gardeners who supply the markets of New York City. The publication of these methods completely revolutionized, and gave a new impetus to, celery culture throughout the country. Only a few gardeners, who left the old country too late in life to learn new ways, continued to follow the former method of planting in trenches. Not only were these new methods of treating the crop of great service to growers of celery, but an almost equal



THE "WHITE PLUME" CELERY.

benefit resulted from the advocacy of the dwarf varieties, which grow to the hight of about two feet or less, in place of the tall kinds reaching the hight of three feet or more. The tall kinds require the growing of a foot or more of useless leaves, involving extra labor in their culture and in storing the plants. The dwarf varieties afforded as much of eatable stalk as the tall kinds, while they could be produced at much less cost. A few years ago, a New York grower of celery, noticed in a bed of seedlings of one of the dwarf varieties, a single plant, that in the shape of its foliage and in its habit of growth, was very different from all the other plants in the bed. This singular plant was carefully preserved, and was found to perpetuate its peculiarities by seed, and thus became the parent of a distinct new variety, which has been named the "White Plume." The name was suggested by the form of the inner leaves, which being greatly sub-divided and feather-like, form a beautiful ornament for the table. But this is not the most marked peculiarity of the "White Plume." The broad outer leaf-stalks grow in such an upright and compact manner, that the inner stalks are so compressed and deprived of light, that the plant becomes self-blanching. This peculiarity of the plant greatly lessens the labor required by the celery crop. In the beginning the "White Plume" requires the attention that must be given to all other kinds of celery; i. e., the plants must be raised and transplanted to the rows where they are to grow. With ordinary kinds of celery, after the plants have nearly made their growth, they are "handled," that is, the leaves are brought into an upright position, and kept there by pressing the soil firmly against the base of the leaves with the hands. After this, to blanch the celery, the earth must be banked upon each side of the row, to exclude the light. With the "White Plume," the labor stops with the "handling," the peculiar growth of the plant completing the blanching, as shown in the engraving. The "White Plume" promises to still more simplify celery culture. Its history is especially interesting, as showing the importance of noticing any marked variations among cultivated plants, and if these promise to be of value, of caring for and propagating them.

Getting Ready to Sow Winter Wheat.

JOSEPH HARRIS.

If winter wheat is to be sown after early oats, peas, beans, early potatoes, or corn-fodder, the moment the crop is off the ground, stick in the plow, or gang, or cultivator. Do not wait for rain. The weeds and stubble will pump up more water from the soil than any ordinary rainfall at this season will be likely to furnish. If you plow, or in anywise work the land, it will not only destroy the weeds and check the rapid evaporation of water, but should we have a shower, the rain will penetrate deeper into the worked soil, and render it soft and mellow. We have everything to gain and nothing to lose by promptness in plowing immediately after the previous crop has been harvested.

In four years out of five, the principal difficulty in sowing winter wheat in proper season is to get the soil moist enough to cause the wheat to germinate vigorously and evenly. We must recollect that the soil, even during a severe drouth, contains in the first two or three feet a great many thousand gallons of water per acre, and still more at a greater depth. This water is constantly rising towards the surface. Any growing plant pumps it up out of the soil, and evaporates it into the atmosphere. The amount of water thus evaporated is enormous. The bare soil evaporates water from the surface as long as there is any to evaporate, but the loss of water from a bare soil is nothing in comparison with the loss on land upon which plants are growing.

In the winter wheat section of Western New York we sow our wheat from the 1st to the 20th of September. It is ready to cut from the first week in July to the first of August, varying greatly in this respect according to the season. As we go South, wheat is sown later in the autumn, and is ready to harvest earlier in the summer.

Where the Hessian fly is troublesome, we have to avoid early sowing in the autumn. The fly lays its eggs in the young wheat plants in the autumn, and late sowing is one of the remedies. On the other hand, when wheat is liable to injury from the Midge, we have to avoid late sowing. The Midge flies lay their eggs in the ears of wheat when it is in blossom, and an early crop of wheat is far less liable to injury than a late crop.

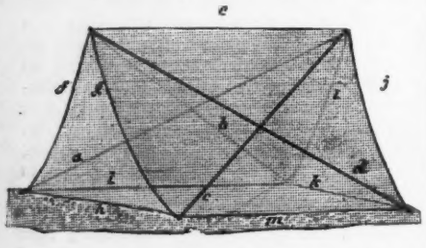
Fortunately neither the Hessian fly nor the Midge has done much damage of late years, and the tendency among our best wheat-growers is towards earlier sowing. After the first of September it is thought desirable to sow as soon as the soil can be got sufficiently moist and mellow. It is just here where promptness, good judgment and science are all requisite. Rain will help us, but it will help us still more if we go to work as though no rain was expected. As we said before, there is water enough in the soil, but it is not near enough the surface to cause the seed to germinate. What we have to do is to bury all the weeds, stubble, and growing plants, and keep the surface soil fine by the frequent use of the cultivator, harrow, and roller. We know this is easier said than done—but on our strong wheat land it is the general experience that much of our success will depend on our ability to get the wheat well started in the early autumn.

Bee Notes for August.

W. Z. HUTCHINSON.

HOW TO MANAGE ROBBER BEES.—At the close of a honey-flow, and especially the bass-wood honey harvest, bees are inclined to rob. Let a hive be open five minutes at such a time, and a horde of hungry robbers are ready to pounce upon any exposed portions of the combs. A part of the honey crop is usually upon the hives at the close of the harvest, and the task of removing it is attended with "unpleasantness," and sometimes with loss. The queen breeder must necessarily open hives and handle combs, whether robbers trouble or not. When examining the bees in preparing them for winter, robbers are often particularly troublesome. To save themselves from these annoyances, many bee-keepers have a small tent, in which they can perform the work of the apiary. This consists of a light frame-work covered with mosquito netting, easily carried from place to place, and set over the hives that are to be opened. The simplest and most convenient style of bee-tent known to the writer is shown in the illustration given below.

The strips *a*, *b*, *c*, and *d*, are straight-grained pine, eight feet long, one inch thick, and an inch and one-fourth wide. They are held together where they cross by ordinary wood-screws. Their upper ends are tied together with stout twine, that passes through small holes. The "ridge pole" is a piece of heavy tarred twine. An inch from the bottom of each strip an ordinary wood-screw is



A BEE-TENT.

driven in until its head projects about half an inch. Upon each screw is placed a small iron ring, and to these rings are attached the cords of tarred twine, *f*, *g*, *h*, *i*, *j*, *k*, *l*, and *m*, which complete the frame-work of the tent. The upper ends of the wooden pieces are covered with sheep skin, to prevent them from punching holes in the mosquito bar covering. To keep the wind from upsetting the tent, the lower ends of the wooden strips are furnished with curved points of heavy wire, two or three inches long, that can be thrust into the ground. When the tent is in position, the bee-keeper raises one side, crawls under, and performs his task unmolested by the buzzing crowd outside. By slipping the iron rings, to which the cords are attached, off the screws, the wooden bars can be shut up like a pair of shears, thereby folding the whole bee-tent as easily as an umbrella.

GRADING, CRATING, AND SHIPPING HONEY.—The first grade should consist of only perfect, white combs, and it is the writer's opinion that, in many instances, there should be only this one grade of comb-honey. Some bee-keepers make a second grade of unfinished sections, but if the apiary is rightly managed, there will be but few of these at the close of the season, and it is better to extract the honey from them, and keep the combs until another season. Honey that is too dark for the first grade, should not, as a general thing, be stored in sections, as it is usually more profitable to extract it. Before crating, sections should be scraped clean of propolis. A small crate is preferable; it is more easily handled, and less liable to be "dumped," while it sometimes enables the retailer to sell a whole crate of honey at once. Sections should be placed only one tier high in shipping crates; because if any combs of the upper tier become injured, the honey drips down and soils those of the lower tier. Some bee-keepers make a shallow "dish" of heavy manilla paper, and place it in the bottom of the crate, then if combs are injured the "dish" catches the honey, and prevents the soiling of other crates. All honey crates should have glass on at least one of their sides.

Small lots of honey should be sent by express, and large ones by freight. Express matter is necessarily handled rapidly, and when there is a large lot of honey to unload, it is apt to be jerked off in a hurry. When a large lot of honey is sent by freight, the consignee should be notified in advance, so that he may see to the unloading. Small crates should not be stacked up in a tall, upright pile, in a car, but built up in the shape of a low pyramid. If access can be had to one end of the car, place the honey there, as it will be protected on three sides from tumbling down, and upon the other it can be built up like a flight of stairs, which will pretty effectually prevent any crate from receiving a tumble. Always handle honey with care.

A New Process of Extracting Sugar from Sorghum.

In the extraction of sugar from the Sugar Beet, a great improvement was made some years ago in Europe. Instead of pressing the juice from the beets, the roots, finely sliced, were treated with water, which dissolved out the sugar and greatly simplified the process. The introduction of new varieties of Sorghum from which sugar can be procured, has given a new impetus to Sorghum culture, which is to be supplemented by new methods of treating the cane and extracting the sugar it contains. In the usual method, the Sorghum canes are passed through mills, having several erect or horizontal rollers, which express the juice. This milling is found to leave about forty per cent of the sugar which the cane contains, in the begasse, or refuse cane, and is a dead loss. The chemist of the Department of Agriculture at Washington, D. C., reports his experiments with Sorghum, with a view of obtaining a more complete extraction of its sugar by means of diffusion. These experiments and their results are published by the Department in the form of a Bulletin, which those interested in the manufacture of Sorghum will do well to procure and study. As a matter of general interest to farmers, we give a mere outline of the methods. The first point was to reduce the cane to thin slices. For this purpose a machine was constructed, to which the ends of the cane were presented and cut into slices one-eighth to three-sixteenths of an inch in thickness. The sliced cane was then subjected to the action of water, in a "diffusion battery," consisting of eleven cells, each holding ten gallons. This battery is illustrated in the Bulletin, by an indistinct photograph, in which pipes of various kinds are in such numbers

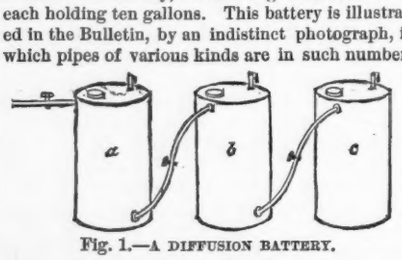


Fig. 1.—A DIFFUSION BATTERY.

as to confuse. Each cell, apparently of cast iron, is thirty inches long by twelve inches in diameter. It has an opening at the top for filling, and another at the bottom for discharging. By a complicated system of pipes and cocks, water, hot or cold, is let into the top or bottom of each cell. We give in figure 1, three of the cells of the diffusion battery, simplified as a diagram, merely to show the working. In the diagram the pipe is so placed as to have the liquid from near the bottom of one cell pass into the top of the next, and so on. The pressure of the city water was employed. The water in the first cell, *a*, being charged with sugar, is forced out from near the bottom of that cell into the second cell, *b*, which it enters near the top, and so on, throughout the whole battery of eleven cells, and that from the last cell is evaporated. The experiments showed, that cane containing eighty-nine per cent of juice, yielded to the diffusion process about eighty-five per cent. The diffusion process will properly receive the attention of those who now extract sugar from Sorghum by the wasteful process of milling. Those who would experiment with diffusion, without going to the expense of constructing a battery like that of the Department of Agriculture, can construct a simpler apparatus by the use of small kegs. Each keg should have an opening at the top for charging, and one near the bottom for removing the spent Sorghum chips. By arranging the kegs at proper hights, as in figure 2, the liquid from *a* can be made to flow into the next, *b*, without the use of hydraulic pressure. The diffusion treatment of Sorghum promises excellent results, and whoever aids in adapting the method to small operators, will be a benefactor to the farming community.

Fig. 2.—THE KEGS ARRANGED.

Melons for Market.

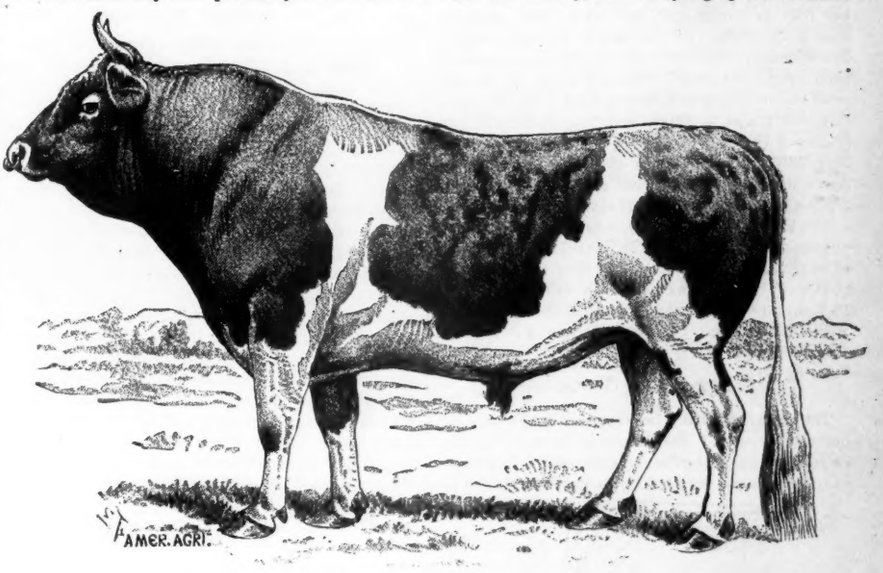
There are, in the writer's neighborhood, a number of small farmers, to whom the melon crop is one of importance. When they are asked what variety of melons they raise, the answer usually is, "my own." These farmers have learned, by experience, that it is of no use to grow more than one kind of melon if they would keep the variety pure, and moreover, that by care in selecting the seed-bearing melons, each secures a form or strain so well suited to his soil, etc., that he is justified in calling it "my own." This appears to be the true course for those who grow melons for market, viz., when they once get a good variety to stick to it, and to improve it by great care in selecting the seed for future planting. Experience shows that melons of the same variety, while they may be alike in external appearance, often differ greatly in quality. Whether this may be due to crossing in the flower of the melon that bore the seed, or to the natural tendency of cultivated plants to vary, it is sufficiently frequent to establish this rule, viz.: Taste all melons before saving their seeds for planting, and reject the seeds of those that do not come up to the standard. It is only by this course that the quality can be preserved. But the growers above referred to, are noted for the large size of their melons, and as sending to the city the largest good melons that are offered. This size, as well as the quality, is the result of several years of careful selection of the largest, as well as the best, as seed-bearers. Not only has size been considered, but relative weight, as indicating thickness of flesh. Shape has also been regarded, and the melons are surprisingly uniform in this respect. What these melon-growers have done, that is, established for the neighborhood a market reputation for their melons, due to size, solidity and high excellence, can be done elsewhere, by following the same methods. Now, with the ripening of the present crop, is the time to begin a rigorous careful selection for next year's seeding.

Guernsey Cattle.

Some of our readers may not know that Channel Island cattle, which used always to be called Alderney cattle, are really of two distinct breeds. Those native to the Island of Jersey, are called Jerseys, and the rest are Guernseys—even those of the Island of Alderney. The latter island never has produced any number of fine cattle, and its name unfortunately was given to the Channel Island cattle by a mere accident. At one time England was making a great fortified harbor. Hundreds of vessels were going and coming to and from Alderney, and because they could get no return loads from that rocky little island, they went to the larger ones of the group, and whatever they brought, potatoes, butter, cabbages, cauliflowers (for which the islands are famous), or cattle, all were supposed to come from Alderney. This led to the application of the name, Alderney, to all the Channel Island cattle. The name remains, and is a good one to apply to any Jersey or Guernsey cattle which for lack of pedigree cannot be registered in the Jersey herd-book or are of mixed blood.

These cattle, the Guernseys, not less than the Jerseys, have proved themselves hardy, prolific, adapted to all countries, and admirable as family cows, and producers of the choicest butter. The Guernsey cow has not as yet figured so notably in the fashionable circles as has her cousin of the adjacent island. She is not credited with the same sylph-like delicacy of figure, or gazelle-like style. Her merits are of a more homely and useful order. She is heavier, and while a great milk and butter producer, has the quality of converting feed either into milk and butter, or into admirable beef, as the occasion may require. Her butter is much higher colored than the average of Jersey cows. So intense, indeed, is the color, that the presence of one Guernsey in a herd of six or eight common cows, or of eight or ten Jerseys, will give an agreeable tint to the butter all winter, provided there is proper variety in the feed supplied to her. The quantity of butter she is able to produce, is as yet undetermined. Some cows within our knowledge, have approached three pounds a day. Many are worthy of being in the "fourteen-pound list," if any such list has been, or is to be made.

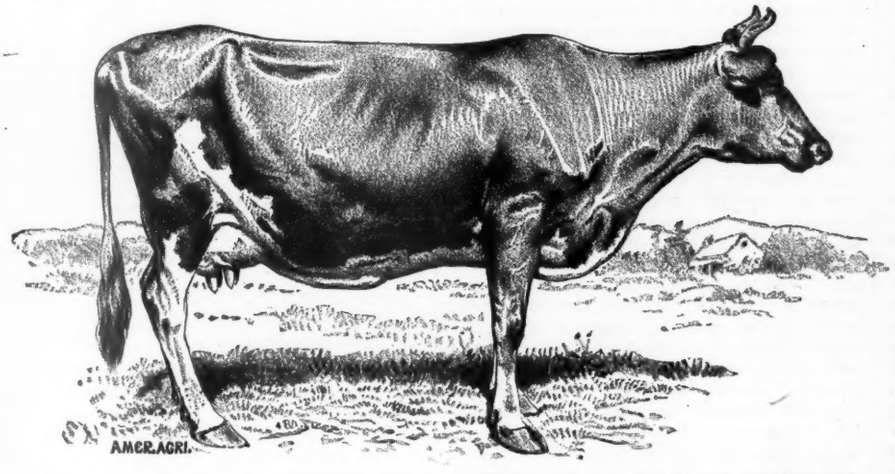
Jersey breeders from perhaps the earliest periods have enriched their strains of breeding by the occasional introduction of Guernsey blood. In fact, it is a conceded point that the variable richness of color possessed by the Jerseys is largely due to a remote Guernsey cross. The variability in color, both in the skin and in the milk of Jerseys, plainly indicates a characteristic not thoroughly fixed in the breed. This color or "richness," as it is termed on the Islands, when highly developed in the more fashionable race, is so often associated with a rich, yellow-fawn, or yellow-fawn and white, or a positively light-red or red and white coat in Jerseys, that it offers another evidence that both are effects of the Guernsey cross. As a notable example in point, we refer to the well-known cow Jersey Belle of Scituate, now dead. She was completely of the Guernsey build and color, with perhaps slight shadings, which indicated Jersey blood. Her head and legs were delicate for a Guernsey, but not unlike many, and her butter, at least her grass-made butter, was yellow enough for a Guernsey. The cross of Guernsey and Jersey cattle will at any time produce just such cows in style and general form, while in the matter of yield of both milk and butter, we have no doubt that among a lot of such cross-breeds, some would approximate even her extraordinary record.



THE GUERNSEY BULL "LANCER."—*Drawn (by Forbes) and Engraved for the American Agriculturist.*

The proper development of this excellent, beautiful, and useful breed, and the responsibility of making it popular, rests with the breeders of the American Guernsey Cattle Club. They cannot expect the breed to "boom" itself. No doubt there are families of extraordinary butter power—those ought to be found out and brought out. A few years ago it was enough for the lover of Jerseys to know that an animal he thought of buying was recorded in the Register of the American Jersey Cattle Club. Now, though that registration is essential, it counts for very little in determining the value of a cow supposed to be worth more than a hundred dollars. The butter record of her ancestry, and of cows known to be of her immediate kindred, determines her market value to be two, four, or six hundred, or even many thousands of dollars. The same must be, and we predict it soon will be, the case with the Guernseys. The great yielders, like "Elegante," for instance, draw their blood from sources in which butter has been for generations a characteristic, or else they are extraordinary sports of nature. If the qualities are inherited, as without doubt they are, they will be transmitted to the progeny of such cows.

The breeder of Guernseys must therefore bear in mind that pedigree is the foundation of success. This pedigree must be written in butter. A few weeks ago, a famous Jersey bull was sold at auction in this city, in the very high prime of his life a sure getter, of magnificent form and size, of the most fashionable color, the most illustrious animal of his breed in the world as a prize winner, and of an illustrious ancestry as prize winners, not however particularly famous as butter producers. Three years ago he sold for thirty-two hundred dollars. The breeders of the Island of Jersey felt his loss to the island so keenly that they sent over to buy him, but were out bid by an enterprising New York breeder. This year he sold for the low price of one hundred and forty dollars, simply because so few of his daughters, which have come to milk, prove of particular excellence as butter yielders, although they are one and all hard to beat in the prize ring. Butter is therefore the first consideration, both in the pedigree and in the individual if a female, and in his dam if a male, but above all in his daughters after he has come to maturity. A bull at three years old should have daughters in milk, the producing power of which can be tested. A two-year-old heifer, giving twenty to twenty-eight pounds of milk a day, yielding ten to twelve pounds of butter a week, is good enough. Such are exceptional, but they sometimes occur.



GUERNSEY COW "VESTAL OF LARCHMOUNT."—*Drawn (by Forbes) and Engraved for the American Agriculturist.*

Next to butter comes form. In milch cows of great capacity, we find a characteristic form prevails. This is not an indication of much butter, at least not an infallible indication, for many great milkers are only moderate, and occasionally small butter producers. Still it is a good thing in a cow to be well-formed for a milk yielder. This form has been cultivated, that is bred for, for years in Guernsey, and the best Guernsey cows now possess it. It is marked by a long body, much larger in the hind than in the fore-quarters, open ribs, a long, broad loin, wide, high hips, flat thighs, a deep flank, and a great expansible udder, with strong, tortuous milk-veins upon the belly and beneath the vulva. The favorite color for Guernseys is yellow-fawn with buff nose, yellow horns and hoofs. White spots are not objected to, and a white triangle in the forehead, and white switch are regarded as characteristic. Well-grown Guernseys are one to two hundred pounds heavier than average Jerseys, and the larger ones often approach the size of Shorthorns. Guernsey steers, or oxen, have occasionally been fattened to reach the weight of sixteen hundred to two thousand, or even two thousand two hundred pounds. Guernsey and half-

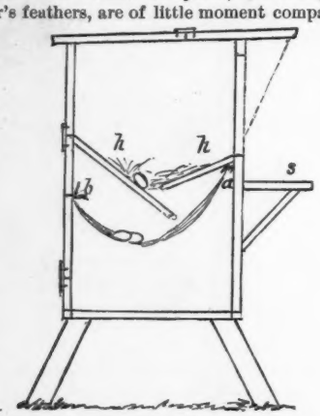
Guernsey calves are usually large, so that the use of Guernsey bulls is favored by farmers, who make veal of many of their calves. In these particulars the Guernsey is a strong contrast to the Jersey.

We present our readers on the preceding page, engravings of two excellent Guernsey animals. They are the property of Mr. H. de B. Schenck, of Larchmount, Lenox, Mass. The cow, "Vestal of Larchmount," (1507), (Guernsey Herd-book, number 686), is lemon-fawn and white, was dropped Nov. 1877, selected on the Island, and imported by Mr. Schenck. She is now giving eighteen quarts of milk a day. "Vestal" comes of a line of famous prize winners, and herself won third prize in a class numbering one hundred and four entries, at the Shows of the Royal Guernsey Agricultural Society, May, 1883. She was imported in September, calved April 16th, and two weeks after that date, one day's milk made two pounds six ounces of butter.

The bull, "Lancer," (131), was imported in dam, and dropped in August, 1878. He is fawn and white, of superior form and size. He won first prize at the Central Berkshire Stock Show at Lee, Mass., in 1882, and the next year first at the Berkshire, Mass., Agricultural Society Show at Great Barrington.

Egg-Eating Hens.

The very worst habit hens can get into is that of eating their eggs. Dropping eggs from the roosts, or about the houses and yards, and eating each other's feathers, are of little moment compared to



AN EGG TRAP.

it. It is a habit they learn from one another. If only one or two, or a few hens in a flock eat eggs, make short work with them. They will probably be found healthy and fat, and will at least make good broth, even if too old to roast. But if, as with a subscriber living at Grandin, Dakota Ter., who has one hundred and twenty laying hens, and gets only fifteen eggs a day, the case is different. It will probably pay to outwit the hens, and thus cure them. There have been many nests in use, for allowing the egg to roll out of the hen's sight as soon as laid. The engraving represents a section of a range of eight to twelve laying boxes, or nests, with each nest about a foot square, and separated more or less completely from the adjoining ones by a board partition. The bottom of all the nests is made by two boards, one of which is five inches wide, the other about eight. They are fastened so as to leave an inch-and-a-half space between them. Before they are nailed in place, some fine soft hay, *h*, is fastened upon the upper sides by tacking on strips of tape, leather, or list. Care should be taken to have this hay or grass lie smoothly, and that upon the narrow board must have only a few of its thin, soft ends hanging over the edge. The centre of each nest must be made on the broader board, and a painted wooden egg fastened on by a screw going through the board. When the hen enters such a nest, she will mistrust nothing; she will not eat the wooden egg, and when she lays her own it will fall through the bottom. The egg is received upon a mass of hay, or, much better, a piece of sacking, *a*, *b*, tacked to the underside of the narrow board, and at a lower point to the top of a board behind the box hinged at the bottom. The sacking must be slack enough to allow the hinged board to open far enough to take the eggs out, but not so that they will roll out. There is an alighting shelf, *s*, and a broad cover over all, which may be hinged in the centre if desired, for the greater convenience of examining the nest. Such a range of nests, covered as described, may have a roosting pole a foot above it, and the droppings being caught on the top, can be readily carried off from week to week.

How and When to Shoe Horses.

PROF. D. D. SLADE, HARVARD COLLEGE.

Horse-shoeing has given rise to much controversy, yet it is a matter which in itself, so far at least as regards the principal object in view, is extremely simple and easily understood. The object of the shoe is the protection of the ground surface of the outer wall of the hoof against excessive wear. In the wild horse, the balance between the growth and the wear of the horn of the hoof, is equally maintained, but when civilization subjects the animal to hard and rapid labor upon paved and macadamized roads, then this balance is destroyed —the wear exceeds the growth. Hence the aim of the farrier is to ward against this condition of things by attaching a rim of iron or steel to the circumference of the foot. The moment this is done, however, the balance is again destroyed the growth will exceed the wear, necessitating in time the removal of this metallic rim, and the reduction of the horn by artificial means. Although the growth of the horn downward is equal over the entire surface of the wall, it will usually be found that in the healthy foot, more must be removed from the toe than from the heels or quarters. This is because the shoe is firmly fastened at the toe, whereas, in the other regions, especially at the heels, there is a certain amount of motion allowed by the absence of nails, and consequently more or less wear takes place. This may be readily seen on examination of a shoe that has been worn for three or more weeks, the burnished line on the foot surface of the shoe showing distinctly the outline of contact. It may be asked whether it is not practicable in many cases to dispense with shoeing. We answer most unhesitatingly yes, with great benefit to the animal as well as to the owner. There are many country districts where the roads are of turf, or are sandy, and where shoes are unnecessary. If the colt is never subjected to this process, the foot acquires that natural firmness and hardness which will serve the animal under ordinary circumstances. In winter, when the roads are very slippery, and the horse is called upon for heavy draft, in many cases we must provide means by which he can gain a firmer foothold; and this, in the present state of our knowledge, can only be done by shoes furnished with calks. We do but follow a blind and foolish custom where we apply shoes without the necessity. When shoes have been constantly worn, and it is desirable to dispense with them, great care must be exercised in gradually accustoming the foot to this new condition, and no long or severe labor should be at once demanded of the animal.

Calks are detrimental under any circumstances, and should always be avoided if possible. There can be no reason or excuse for their use on road horses of light draft in summer, even on pavements. When actually required, it is very essential that they should have an equal bearing on all sides, at the toe as well as at the heels. Any unequal distribution of the weight of the animal is sure to bring about strains of the ligaments, sinews, and muscles. The fashionable heel of the modern belle is not more sure to lay the foundation for future suffering. No shoe should be allowed to remain upon the foot more than four or five weeks. Many farmers patronize the farrier who nails on the shoes so that they will remain more than double this time, with the idea that such a proceeding is economical, whereas, it is the furthest possible remove from economy. As the growth of the horn is constantly downward and outward, the shoe, which when applied weeks before, was fitted to the foot, has now become altogether too small, and consequently there is constant pressure upon the sensitive portions at the quarters, causing corns and other affections. On the removal of the shoe, if again to be applied, the ground surface of the wall of the hoof must be reduced by the rasp to a perfect level, which can be attained by the eye accustomed to good work. The level of the untouched sole forms a ready and practical guide for the amount of reduction. Neither the sole nor the frog should undergo the least mutilation, since nature removes by constant exfoliation all superfluous horn, neither should the natural barrier at the heels, provided for the express purpose of keeping the foot expanded, ever be cut into, as is the almost universal custom, under the insane idea that it "opens out" the foot. No greater folly or barbarity can be committed, and no surer way could be devised for producing contraction with its attendant evils. The walls of the hoof should never be rasped. It is by this process that the external fibres of the horn are destroyed, the beautiful polish removed, and the internal surface exposed, whereby the entire structure is rendered more brittle and unfitted to perform its functions. Let the intelligent farmer who has hitherto given little or no thought to this important subject, follow the above instructions, and satisfy himself of their correctness, and tell them to his neighbors.

An Enemy to Maple Trees.

Among the many kinds of Bark-lice (*Coccidæ*), is one which attacks the Maples. This was first described in 1868 as *Lecanium acericola*, along with another new species peculiar to the Osage Orange (*L. Macluræ*). Both these insects are shown in the engraving, that at the left being the one which attacks the Maple. The insects, on being hatched, attach themselves to the tender bark of the young shoots, and also to the leaves of the Maple. A scale is formed upon the back of the louse, seen in the dark portions in the engraving. From beneath the scale protrudes a snow-white mass of fine cottony threads, which cover and protect the eggs, and perhaps the newly hatched insects. The eggs are hatched in July. The description referred to is very meagre, and nothing is said of the means

MAPLE AND OSAGE ORANGE SCALE INSECTS.

for destroying the insect. Specimens were recently sent us by Mr. Chas. E. Keller, Shelby Co., Ill.

The insect was first discovered in Indiana and afterwards in Iowa. In the absence of any report as to the best means of destroying the insect, we should be disposed to try the Emulsion of Kerosene, described in March last, page 114. This should be freely thrown into the tree, using a garden syringe. This or any other application would be most effective, if it could be applied when the insects are first hatched, and before they have formed a scale, a point which can only be ascertained by close observation. Let us hear from any who have successfully treated this pest. Mr. K. states that the insect "is devastating the shade trees, and is beginning on the fruit trees."

A Good Strawberry Coming.—The Banquet.

The *American Agriculturist* has long urged that the growers of new strawberries should work in the direction of high quality, rather than in that of large size. No one wishes to be obliged to cut a strawberry in order to eat it conveniently, and we already have a sufficient number of varieties, the only claim for which is stated in inches of circumference. Mr. J. R. Hawkins, a successful cultivator of small fruits, at Mountainville, Orange Co., N. Y., submits to our inspection abundant specimens of a new strawberry which he calls the "Banquet." The origin of this new berry is stated by Mr. Hawkins in substance as follows. In 1880 he had a bed of that high-flavored, but rather dry variety, "Miner's Prolific." Some of the runners of this had made their way into a fence row, where our native wild strawberry (*Fragaria Virginiana*), was growing. Two or three of the largest berries of "Miner's Prolific," from the plants closely associated with the wild ones, were selected. The seed from these were separated, and sown in a box of earth, placed where it would receive the sun during the early part of the day. Some thirty or forty seedling plants had made their appearance in September, which were transplanted to the open ground in October. Unfortunately the hens undertook the cultivation of the patch, and with the usual result. The uprooted plants were replanted, and all were left without protection the following winter. In the spring of 1881, one of the seedling plants threw up a flower-stalk, and in June ripened about half a dozen berries of moderate size, and of such excellent quality, that Mr. Hawkins was careful that all the runners it made should take root. These gave him about six plants, which were set out in August. In 1882, about a quart of berries were borne by these plants, which were submitted to several well-known pomologists, who at once pronounced the fruit to be "one of great promise." The runners from the plants were pot-layered, and the plants, about fifty, were set out in September. These, in 1883, bore about fifteen quarts of berries. The same year Mr. Hawkins exhibited the berries in Boston, where the Mass. Hort. Soc. awarded it the premium for the best new seedling. We have been thus particular in giving the details of the production of the "Banquet," in order that they may serve as a guide to others who wish to undertake the production of seedling strawberries. Mr. Hawkins states that the plants have each year increased in productiveness, and in the size of the fruit. This year berries were produced measuring an inch and a half in diameter, which is certainly large enough. The berries sent us were of uniform conical shape; while a few are shouldered, none are of the cockscomb form. The fruit is perfectly ripened at the end opposite to the stem. The color is of a rich crimson, without that tendency to turn black, so unfortunate in some varieties. We are informed that Mr. Charles Downing, noted for his caution in expressing an opinion, has stated that he regards the "Banquet" superior in flavor to the berry which bears his own honored name—high praise indeed. After carefully testing the "Banquet," we accord it a place among the highest flavored strawberries. The exquisite flavor of the wild fruit is so marked, that we can readily believe that this is due to a crossing with the wild plant. Mr. Hawkins' course in regard to sending out his new seedling, is to be highly commended. Many berries with not a tithe of the real value of this, have been heralded far and wide as the coming berry. Mr. H. declines to place the "Banquet" on the market, before it has been fully tested by further culture. He expresses his regrets that it is not possible to have a committee of the Am. Pomological Society report upon the merits of new fruits, and adds: "I have a strong aversion to letting the 'Banquet' go out before some such thing is done, deeming that some action of this kind is needed for the protection of the public."

THE "BANQUET."

A New and Serious Strawberry Pest.

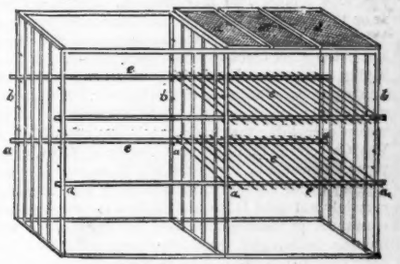
Mr. Samuel G. Wynant, Rossville, Staten Island, N. Y., a successful strawberry grower for twenty years, informs us that this year his crop has proved almost an entire failure, owing to the ravages of vast numbers of a small beetle. Specimens being submitted to us for examination, we have discovered them to be the same insect mentioned by Prof. Cook, State Entomologist of Michigan, as new to that State, viz., the Strawberry Weevil, (*Anthonomus musculus*). Now for the first time this beetle appears as a serious enemy to the strawberry, though it has been known to scientists for some years, having been described by Say. The readers of the *American Agriculturist* will be kept fully posted as to its progress. There are several species of this genus *Anthonomus*, closely resembling each other; in fact, the samples brought us by Mr. Wynant contained at least two species of these nearly related little weevils. The beetle is about an eighth of an inch long, and varies in color from a dull-red, to almost black. The wing-cases have impressed lines, bearing a few scattered dots. In the accompanying engraving the weevil is shown much enlarged, with hair lines to the right indicating the natural length. Very little is known of the habits of this new enemy to the strawberry, and its ravages this season suggest it as a subject worthy of the immediate attention of entomologists. Until the natural history of the insects is known, we can only mention remedies to be applied to the devouring beetles. The weevils feed upon the floral parts when the strawberry plants are in bloom, and also pierce the fruit-bearing stems, causing them to break off with their partly formed berries. In using any insecticide, it must be remembered that it is unsafe to use substances poisonous to persons. Paris Green and London Purple may be safely used on young apples to kill the codling moth worm, but to dust or spray a fruiting strawberry bed with a compound of arsenic, would be running too many risks. An emulsion of kerosene or petroleum, a formula for which was recently given in the *American Agriculturist*, may prove a satisfactory remedy. Pyrethrum powder is an excellent insecticide, and experiments should be made to prove its value in this case. After the life history of the weevil is fully known, it may be found easy to destroy this enemy in one or more of its earlier stages of development. It is hoped that the destruction which has come to the Staten Island berry fields, may not be repeated there, or visit other localities in coming years. Some of our insect enemies come and go, while others remain and continue to destroy as long as their favorite food-plants are grown, unless fought with a tireless vigilance. Mr. Wynant observed a few of the weevils on his strawberry plants last year. This fact leads us to suggest that it may be best to burn over with straw, and plow under the ruined fields, and if possible begin strawberry beds elsewhere, or grow other crops and attempt to starve out the troublesome weevils.

STRAWBERRY WEEVIL.

This beetle must not be confounded with another, which, though destructive, works in a different manner. We refer to the Strawberry Crown-borer *Tyloderma fragariæ*. This beetle is a trifle larger than the one above figured, and is brown, with darker brown spots. It lays its eggs upon the crown of the plant, and the larva, when hatched, eats its way into the crown, upon which it feeds and kills the plant. Digging up the infested plants and burning them is the only sure remedy. Subscribers living elsewhere will please report ravages of the new strawberry pest, if any occur.

A Silk-Worm Cocoonery.

Any cheaply constructed outbuilding will answer for rearing silk-worms, if it be not near to any bad odors, and can be easily ventilated and heated. If the building is old, it should be thoroughly renovated, white-washed, and perfectly dried before receiving the worms. For household culture, a room eighteen by twenty feet, with two movable shelves extending around the room, two feet apart,



A SILK-WORM RACK.

will safely accommodate sixty thousand worms. A building eighteen by thirty-six feet, ten feet high, with four windows and two doors, will house two hundred thousand to two hundred and fifty thousand worms without crowding. Each cocoon rack is fourteen feet long, by five feet wide. There are six uprights, *a*, *a*, seven feet high, two inches wide, and one inch thick, mortised into the top and bottom of the frame. Stout nails, *b*, *b*, are driven into each upright, five inches apart, for holding the lath platforms, *c*, *c*, by which the worms feed. These racks can be taken apart and stored away after the feeding season is over, while the cocoonery can be used the remainder of the year for many other purposes. The trays, *d*, *d*, are placed on the platforms and used for feeding the young worms until after the second moult, when laths are laid crosswise over the rails, *e*, *e*, and branches laid on the laths. The lowest rods rest on the nails driven into the uprights, eighteen inches from the floor. As the branches accumulate on this platform, long rods with laths are laid on every fifth nail from the bottom. The worms will crawl upon the fresh leaves placed on the upper platform, and the lower rods may be drawn out and the litter removed. The worms may be carried to the top of the frame in this manner, and by that time they are ready to spin. When the cocoons are to be gathered, the spinning frames can be taken down. This is the most economical, convenient, and healthful arrangement for raising silk-worms that has been constructed.

The cocoonery should be well ventilated during the greater part of the season, and more especially during warm, sultry weather, the windows and doors need to be kept open night and day.

The sun should not shine directly on the worms, nor should they be exposed to drafts or sudden changes of weather. On damp, cold days, a little fire in the cocoonery will be needed. The natural laws governing the existence of the worm should be imitated as closely as possible.

The trays, *d*, *d*, used for feeding the young worms are made of laths nailed together. Full length laths are used with half lengths for the ends and center pieces. Small nails or tacks are driven in the edge half an inch apart, and twine is wound around each nail, passing across the frame both ways. Heavy brown paper with holes of different sizes, will answer for the bottom of the trays, in place of the twine. Twine trays may be used for feeding the worms, and for spinning, which adds to the convenience of gathering the cocoons. By loosening the twine at one end, and taking it back and forth from the nails, the cocoons can be stripped off in one half the time that it takes to gather them from among the branches, and there is less danger of bruising them.

Animal Ailments.

PROFESSOR D. D. SLADE, HARVARD UNIVERSITY.

HOG CHOLERA. SWINE PLAGUE.—A. A. Eaton, Lackawanna Co., Pa.—Your description of the symptoms exhibited by the sick swine faithfully portrays the course of swine plague. "The symptoms are as follows: first, a dull, sleepy feeling accompanied by a cough, which increases from day to day, and an entire loss of appetite after the first day. The ailment affects the small of the back (the spinal system of nerves), so much so that the hog, in most cases, loses the use of its hinder parts, but in a few instances it can get up and down until death. Later the animal breaks out on the belly and around the throat, with red blotches which increase in size, until they cover the entire belly from under the chops to the tail. They are purplish-red, and look almost like mortification. The hog dies in from three to eight days. So far none have recovered. With two, great emaciation accompanied the disease, but in the other cases they remained plump."—This is a highly contagious disease. By no means expose any newly purchased animals to the poison. Kill the sick and deeply bury all carcasses. Disinfect by efficient means everything that has come in contact with them. Use Carbolic Acid, Chlorine, Chloride of Lime, or Copperas. It would be far better not to occupy the same piggery under any circumstances if it can be avoided, certainly not until it has undergone a thorough and long continued purification. Place any newly purchased animals under strict quarantine long enough to prove their healthy condition. Avoid communication between these and the former herd by the same attendants.

GNAWING THE WOODWORK.—Jno. W. Hall, Hancock Co., Me.—Has a mare which "eats up her crib and everything that she can reach, is fat, feeds and works well."—It is often difficult to ascertain the cause of this propensity. It may depend upon irritation of the teeth and gums, or upon habit, which is the result of confined idleness, or again, the animal may find something in the wood congenial to its taste. We are not treating here of crib-biting as a vice. Whatever may be the cause, the remedy is to provide no wood-work for the animal to gnaw. Place the mare in a box stall with perfectly smooth sides and no projections. Feed grain from an iron manger, and hay from the ground. Give salt, and a chance to eat earth, plenty of exercise, and a variety of food at all times.

FEEDING OF HORSES.—E. Higgins, Norfolk Co., Mass.—Corn and oats should not be ground together in equal quantities, and given as food to the working horses, for the reason that the corn contains twice as much oil as the oats, has marked heating qualities, and being such concentrated food, is liable to produce colic and indigestion. To be sure, there are many horses on slow work that may become accustomed to a mixture of equal parts of oats and corn, and may escape any evil consequences, but still there is always danger. It is better to err on the safe side, and to feed a mixture, in which the oats exceed the corn by just double the amount.

SPLINT.—Mr. B. Moore, Greene Co., N. Y.—Splint is a bony enlargement or tumor, which in its formation causes pain and consequent lameness by the distension of the covering of the bone. This covering is extremely sensitive when at all inflamed. Sometimes the growth is very gradual, and the neighboring tissues accommodate themselves to the abnormal condition without causing pain and lameness. The size of the splint is no criterion of its importance, a small one often giving more trouble than a large one. The treatment in its early stages consists of subduing the inflammation by rest and cooling applications. After all heat and tenderness have gone, blistering is of service, which is to be repeated if the enlargement continues. If pain and tenderness return after an apparent cure, give the animal a long rest. It is not advisable to perform any surgical operation for the mere purpose of removing the tumor, as such an operation may induce an undue amount of inflammation in the parts. The tendency of the splint is to become absorbed. Hence it is not often found upon aged horses. The ointment of the Red Iodide of Mercury often proves an excellent absorbent of the bony tumor, a small portion to be rubbed in daily.

SHOULDER LAMENESS.—Mr. Reuben Davis, Columbia Co., N. Y.—From the symptoms given in your letter, I should say that the horse is suffering from shoulder lameness, the result of a sprain, or possibly of rheumatism, and that morbid changes were going on in the joints, in the course of which bony exudations will be thrown out. The presence of these changes undoubtedly account "for the snapping or cracking noise heard somewhere near the shoulder joint." For treatment, put on a high-heeled shoe, and turn out to pasture. Complete rest, or only very slow, light work, must be insisted on. Subdue any inflammation by warm water fomentations to the joint, to be frequently repeated.

Grandmother's Gingerbread.—A correspondent asks us for a recipe for gingerbread, "such as our grandmothers used to make." Our grandmother's granddaughter makes as good gingerbread as we ever saw, and this is the way she does it: Molasses, two cups; milk, one cup; flour, four cups; butter, one-half cup; soda, one teaspoonful; spice (cinnamon, cloves, or ginger), to taste. We have a notion that the best gingerbread is made without ginger.

Plant for a Name.—P. H. Adams, Williamson County, Tex. The plant sent, which you say the Cherokees call "Tonkawa," is *Gonolobus biflorus*. The genus *Gonolobus* belongs to the Milkweed (*Asclepias*) Family, and its species, usually climbers, are more abundant in the Southern than in the Northern States. But little is known about their properties, except that the roots of one or two are said to purge violently, and the Indians used the juice of some of them to poison arrows.

Our List of Fairs.—Already we receive applications for our list of the fairs to take place the coming autumn. We again urgently request, as usual, all Secretaries of Societies and Fair Associations, who have not already done so, to send us their announcements at once. Our publication of the list, gives each fair, however local, a wide advertising, which is worth taking a little trouble to secure. Let us have the announcements early!

A Curious Insect.—W. L. Remington, New Haven Co., Conn., writes: "I send by mail a curious insect, which I found under a stone in a moist place, and would like to know the name of it." The insect is the Northern Mole Cricket, *Gryllotalpa borealis*. Its name indicates its burrowing habits. This not very common insect was described and figured in the "Doctor's Talks" for November, 1881, page 493. There is another species in the Southern States, and one in the West Indies, which latter is said to be very destructive to the roots of the sugar-cane.

Rose-Bugs and Roses.—M. Stanford Jackson, Allegheny County, Pa., complains of the havoc the Rose-bug makes with his roses, and asks what he shall do to prevent their appearance on the bushes. The Rose-bug appears to defy the ordinary insecticides, and to require catching and killing. In early morning they are torpid, do not readily take to flight, and may be shaken from the bushes at that time. They may be caught upon cloths spread under the bushes, or in broad, shallow tin-pans, which contain a little kerosene. Those caught on cloths may be killed by kerosene or by burning.

Hurrying the Chicks.—H. J. Janzer having heard that there is an incubator that will hatch eggs in considerably less than twenty-one days, asks if it is true, and upon what principle such an incubator is constructed? We doubt if there is any method by which the time of incubation can be shortened an hour. In our experience with an incubator, we have found that those eggs which did not hatch within half a day after the twenty-first, did not hatch at all. The improper management of the heat may prolong the time for a few hours, but that any invention can be made to appreciably shorten it is, we think, very improbable.

Water Cresses.—Several who have suitable streams for growing Water Cresses, ask how to stock them with the plants. If Water Cress grows any where in the vicinity, the easiest way is to get plants or cuttings from an established bed. A fragment, or branch of a plant will grow readily. If plants are not available, they must be raised from seeds, which are kept by the principal seedsmen. The seeds may be sown in pans or shallow boxes, keeping the soil quite moist. When the seedlings are up, water freely, keeping the soil in the condition of mud. If exposed to full light, with plenty of water, the plants will grow very rapidly, and soon be ready to set out in the water beds.

Fertilizer for Strawberries.—C. O. Foster, McKean Co., Pa. Superphosphate of Lime, made by treating bones with sulphuric acid, would no doubt be useful for strawberries, though we should prefer thoroughly decomposed stable manure, or if a special stimulating fertilizer is required, guano, or ashes. If it is proposed to use superphosphate, buy it, but do not undertake to make it. To one without experience in such manipulation, the operation of treating bones with sulphuric acid is a dangerous one, and has resulted in serious accidents. Farmers can make many things cheaper than they can buy them, but superphosphate is not one of these.

Above-ground Cellars.—The subject of building cellars above ground and apart from the dwelling, is evidently engaging the attention of many persons. Mr. H. W. Pond, New York City, writes us a number of suggestions concerning the building of such a cellar, one of which seems of special importance. He says: "I should make the first, or lower floor, of asphalt, and the foundation walls should have a stratum of asphalt laid in them at the level of the floor, to prevent the ascent of moisture." Also, "the asphalt or cement floor," he suggests, "should be sloping, and scuppers made, so that, for sanitary reasons, it could be flushed with water." Mr. P. also suggests, that such a cellar should have an ice-chamber at the top.

Tomatoes and Cancer.—"Old Subscriber" writes: "I have two acquaintances who are afflicted with cancer. They have both been advised by their physicians to discontinue the use of tomatoes, either cooked or raw. Will you kindly give your opinion on the tomato and cancer question?" The statement that the use of tomatoes will cause cancer, has been the rounds of the press like many other loose assertions. We have not seen it stated by any responsible authority that the tomato has any relation to cancer. Secondly, we should wish to know, who decided that the friends in question are afflicted with cancer. Not one case in ten of so-called cancer is really that terrible affliction. For ourselves, we shall continue to eat tomatoes.

What Effect has Salt Upon Animals?—This question comes to us frequently. There is a small body of "reformers" who hold that the use of salt is the cause of many human ailments, as well as the diseases of our domestic animals. The necessity for salt in the human system was recognized in the ancient laws of Holland, which condemned criminals to be deprived of salt in their food, and they died in the greatest torture. Wild animals, especially deer, show that they regard salt as necessary, by travelling great distances in order to reach the "salt licks." Domestic animals show by the avidity with which they dispose of the salt at the periodical salting, that it meets a want of their systems. We should regard these manifestations as proof that animals needed salt, and that it was in some way beneficial. Physiologists tell us that the blood contains a large per cent of salt, and that this is necessary in order to keep the blood in its proper condition.

Meal Worms.—S. B. Doane, San Francisco Co., Cal., asks us: "How can I keep a stock of 'Meal-worms', in what must I keep them, and on what should I feed them, that they may multiply fast?"—There are two caterpillars called "Meal-worms," the parent insect of one being a beetle, and of the other a small moth. The worms are often found in old flour barrels, in Indian and rye meal, old ship bread, etc. They are used as bait in fishing, and especially as food for singing birds. If the worms are not full grown, we should keep them on Indian meal. There is no treatment by which our correspondent can multiply them, as in their caterpillar state they do not breed. They must pass into the state of pupa or chrysalis, from which they will come out as beetles, or moths, as the case may be. These are the perfect states only in which do they breed. The perfect insects lay eggs from which the worms hatch, and live in flour, meal, etc., until they reach their full size, when the same round is again gone through.

Rats and Flies.—We have received from ladies, suggestions for keeping both these pests at a distance. We give these for the purpose of asking for wider experience. If the remedies are generally efficacious they should be more widely known. As to rats, we translate from Mary Hadlein's German letter, who says: "The best thing to drive away rats is the Peppermint plant; they can not bear the smell of it and disappear. We place it in the oats, rye, etc., when they are brought in, and also under the pig pen. Though we no longer have any rats, we keep on using the plant, lest a strange one might make us a visit." In absence of the fresh herb, a few drops of the Oil of Peppermint should be equally efficacious. As to flies, Mrs. L. L., who has had several years' experience in California, writes us: "In southern California every old Spanish residence is surrounded with the Castor Oil plants, and when the American residents are tortured with the "July fly," that rivals all flies in numbers and pertinacity, these Spanish homes have not a fly or a mosquito in them."

Stumps. — Saltpetre and Kerosene.—An item went the rounds of the papers a few years ago, advising to bore a hole in the stump, drop in some saltpetre, and fill the hole with water. The next spring the hole was to be filled with kerosene, which, on being lighted, would consume the stump to the very ends of its roots. Mr. S. C. Sweetser, Aroostock Co., Me., adds his testimony to that of others, to show the entire inutility of this process. He tried it two years in succession, and the stump, which stands high upon the river bank, remains, to hundreds yearly, a prominent land-mark. Dynamite, or gun powder, would no doubt dispose of the stump. But why not, as it interests travellers by the river, let it remain?....Mr. J. A. Conkling, Baltimore Co., Ind., writes that he tried the saltpetre method on thirty or forty stumps, "and in every case failure was the result." He tried dynamite cartridges, placed in a hole made under the stump with a crow-bar. After the match was lighted, "there was a large hole in the ground, and the stump in the form of kindling wood."....Thos. P. Jones, Nova Scotia, adds, that he tried the saltpetre and kerosene method, and "the stumps are as sound as ever."

A Home-made Fruit Picker.—J. Ely, Kane Co., Ill., asks, if we have given an engraving of a good, home-made Fruit Picker. We have, first and last, given a great number of fruit pickers, but perhaps none better than one proposed by J. H. Ten Eyck, Cayuga Co., N. Y., who kindly gives every one the privilege of making and using it. A make-shift picker may be made from an old tomato or similar can. Cut some notches in the upper edge of the can, fasten it to the end of a stick of convenient length, and put a lock of hay in the bottom of the can. Mr. Ten Eyck's can is a bottomless dish, three inches high, five inches across at the top, and three and-a-half inches at the bottom. This dish has a socket, by means of which to attach it to the pole. Above the socket project two stout wires close together below, and spreading above, to detach the fruit. To the bottom of the dish is a long, bottomless bag of cotton cloth, of a proper width, to be tied to the bottom of the picker. This bag, or hose, should be about two feet longer than the pole. By means of this, fruit upon the outside of the tree, always the largest, can be detached, and sliding down the cloth channel, may be caught and conveyed to the basket without bruising.

"How is Corn Hybridized?"—J. S. Harmon, Madison County, Iowa. In answering the above questions, as we, of course, have no means of knowing how much the questioner understands of the fertilization of plants, we are obliged to assume that he knows nothing. The majority of people are aware that there are two parts of the flower concerned in fertilization, the pistil, the part to be fertilized, and the stamen to furnish the fertilizing principle, the pollen. In our fruit trees, in the bean, pea, the tomato, and many others, these parts, the stamens and pistils, are in the same flower. In squashes, cucumbers, and all of that family, the stamens are in one set of flowers and the pistils in others, but on the same plant. If the bees and other insects did not carry the pollen from the staminate, or male flowers, to the pistillate or female flowers of these plants, these latter would not be fertilized. In corn, the two kinds of flowers are upon the same plant. The flowers of the tassel are staminate only, and produce pollen. The pistillate flowers, very simple in their structure, are closely set upon a short stem, the cob, and are surrounded and protected by leafy bracts, the husks. Each one of these flowers has a long, slender, thread-like portion to its pistil (the style), which extends from even the lowest flowers on the ear to the top, and there those from all the flowers hang out as the silk. The end of each thread of silk (stigma) is especially adapted to receive the pollen and convey its influence to the part of the pistil (ovary), which will in time form the grain. No insects are required by the corn to convey the pollen. The pistillate flowers, in the ears, are placed where the pollen from the tassel will fall directly upon them. But it often happens that, just at the critical time, when pollen is falling, a wind may blow. The wind may carry a part, at least, of the pollen away from a corn plant, and bring pollen from a distance, from another kind of corn. This wind-brought pollen, falling upon the pistils of our corn, will cause a mixture, or as our correspondent would say, it will "hybridize" it. As our varieties of corn are all forms of one species, the term crossing is better than hybridizing to apply to the fertilizing of one variety by the pollen of another. It is in this manner, by the aid of the wind that accidental crossing or mixing takes place. It may be that Mr. H. wishes to cross or hybridize two varieties intentionally as a matter of experiment. In that case he must plant both varieties near together. As soon as tassels appear upon the stalks of the kind selected for seed-bearing, they should be cut away before the flowers open. The ears upon these stalks will receive the pollen of another variety, and the seed will be a mixture.

Chat with Readers.

How He Treats Ants.—*S. C. Sweetser*, Aroostook Co., Me., says: "Tell your readers if they are troubled with ants, to open the hills, pour in a little gas tar, and the ants will leave or die."

Pine Saw Dust.—"*R. M. G.*" asks, if well rotted pine saw-dust has any value as a fertilizer.—In itself the saw-dust can have little or no value. It might be useful to divide and dilute some active fertilizer, in the same manner as peat and muck are used, though not so useful as are peat and muck.

Trouble with Plums.—*H. H. Miller*, Westchester Co., N. Y., writes us that he has three large, thrifty plum trees, which bloom every year, but soon after the blossoms drop, the little plums fall also. Not a dozen plums have matured upon the trees.—We cannot guess in this case. Specimens should have been sent.

Robins and Cherries.—*F. Perrin*, Dutchess Co., N. Y., asks, how robins and other birds can be prevented from taking all his cherries.—The only effective way, so far as we are aware, is to protect the trees by means of nets. In England, netting is sold for the purpose. In this country, old fishing seines, not strong enough for their proper use, have been employed.

Grass for a Name.—*M. Haggar*, Harrison Co., Tex. The specimen of the vigorous grass you send, is no other than the much talked of Chess or Cheat (*Bromus secalinus*). There are people who believe that this grass is a degenerate wheat, as it is often found as a weed among wheat. This is no more likely to be the case, than that your Jack-ass Rabbit is a degenerate Burro. As a fodder it ranks very low, and the grass should be treated as a weed.

Red Ants.—*T. C. Underhill*, Orange Co., N. Y., asks us to how get rid of red ants.—The best method we ever tried was to smear the surface of plates with lard; these are to be set on shelves, etc., and small bits of stick or chips laid from the edge of the plate to the shelf, to form bridges or causeways for the insects to ascend. When a large number are caught, scald them, and set the trap again. Insect Powder (Pyrethrum), is said to kill them, but we have not tried it.

A Hay Twister Wanted.—In parts of Dakota, and other far western localities, wild hay is used for fuel. Mr. E. A. Forbuth, Kingsbury Co., Dakota, hopes that among the many useful contrivances published by the *American Agriculturist*, some one will contribute a hay-twister, "a cheap and durable machine to save time and labor."—Any one having a twister in use, will please send a drawing, however rude, and description, to help our Dakota friend.

Hungarian Grass.—*W. T. Coolridge*, Spink Co., Dak. Ter., and others.—Hungarian grass rightly managed, is most valuable, whether for green fodder or for hay. It needs land in good condition, and six weeks of good growing weather, with warm nights. Sow a bushel of seed to the acre—some sow a bushel and a half. The most important point with this grass is to cut it early enough. Cut when the heads are in flower, before the seed begins to form. If cut too late, the bristles that surround the grain become hard, and have been known to injure horses.

Keeping Early Apples.—*J. L. Porter*, Seward Co., Neb., asks us how early apples can be kept until the time of autumn fairs, other than in jars of alcohol.—The fair authorities do not regard that in alcohol as fresh fruit. Strong brine, and a mixture of glycerine and water will preserve the fruit, but there would be the same objections to these as to alcohol. Probably if the fruit were picked while yet hard, and packed in tight boxes, which were placed in an ice-house, they might keep. The experiment is worth trying. Fruit so kept would perish soon after being taken from its cool storage.

A Deposit of Lignite.—*Mr. L. A. Page*, Baltimore Co., Md., sends us a sample of Lignite, a vein of which was found in digging a well. He asks if it has any value as a fertilizer.—Lignite is wood, more or less completely converted into coal, and at best has no more fertilizing value than charcoal. If it could be dug without cost, and exposed to freezing, it would probably be converted into a fine powder. In that state it might be used as an absorbent in stables, etc., and then used on the land. Its value would depend almost entirely upon the matters it had absorbed. For this use, it would not pay to dig for it if much below the surface.

A Rare Tree in His Neighborhood.—*Michael Hege*, Franklin Co., Pa., having found a tree new to him, transplanted it to his yard, where it grew so finely that he wishes to know its name.—The leaves and fruit show it to be the Ash-leaved Maple, also called Box Elder (*Negundo aceroides*), and is common along the banks of the Western rivers. Its rapid growth and regular shape, make it valuable as an ornamental tree. Its wood is much like the Red Maple; it is valuable to plant for fuel on account of its rapid growth. Sugar is made from its sap. The tree is raised from the seed, which is often abortive. The seed ripens in the fall, and should be kept through the winter in sand, and sown in spring.

Trouble with Currant and Snow Ball Bushes.—*W. Angus*, Douglas Co., Minn., sends us specimens of leaves, upon the underside of which are numerous small insects, and "the leaves curl up around them."—The insects are one of the many kinds of plant lice. Most of the plant lice are readily destroyed by tobacco water, and these would probably yield to the same treatment. A pound of tobacco stems, removed from the leaf by cigar makers, or other cheap form of tobacco, may be steeped in water. When the liquid is of the color of black tea, apply it by means of a syringe with a curved pipe, that will allow the lower side of the leaves to be reached by it.....The same answer is made to *C. H. Carlton*, Chicot Co., Ark., who sends plum leaves attacked by plant lice.

Orchard Grass.—*H. F. Juneman*, Mercer Co., Ohio. The strange grass found in your friend's meadow is Orchard grass (*Dactylis glomerata*), in England almost universally called Cocks-foot grass. It seems strange that this grass is so little known, as it is very often sent us, and from States much older than Ohio, to ascertain its name. In many respects Orchard grass is vastly superior to the popular Timothy, especially to sow with clover. Those who sell hay, do not sow it for the reason that purchasers will have Timothy, no matter how hard and woody it may be. It is worth while for every farmer not acquainted with Orchard grass, and that will include the majority, to look into its merits, and indeed into those of several other grasses, and see if it is to his interest to always raise Timothy for all purposes.

Peaches from Florida.—*Messrs. Eppinger & Russell*, New York City, send us specimens of two peculiar peaches, grown on their lands at Olustee, Fla., upon trees only eighteen months old.—They were the Honey and Peen-To peaches, and both of Chinese origin. The Honey is small, oval, with a projection or beak at the end opposite the stem. The flesh has an intense sweetness. This is reproduced from seed almost exactly. It has been cultivated at the North by amateurs, but is too small for market. The Peen-to is the flat-peach of China, which we figured several years ago. It is remarkably flattened at both ends, the flesh being at the sides of the small stone, giving the fruit an odd appearance. The flesh is very sweet with a pleasant peach-stone flavor. This has ripened in Georgia, but we are not sure as to its hardiness in the Northern States.

Is Blood fit for Human Food?—*P. Westrum*, Hamilton Co., Iowa. Blood, containing all the elements of the flesh which is formed from it, is regarded as highly nutritive. On the other hand, if the animal from which the blood is taken be diseased in any manner, the germs of that disease are likely to be in the blood, and to communicate the disease to those who use it as food. This objection is answered by those who advocate the use of blood as food, by the assertion that these germs may be killed by cooking. Among Americans there is a general aversion to the use of blood, though their English ancestors were very fond of "black pudding," made with blood, fat, spices, and oat-meal. The Germans use blood largely in the form of sausage. If one wishes to make use of blood as food, we know of no reason why he should not do so, provided the blood is taken from healthy animals.

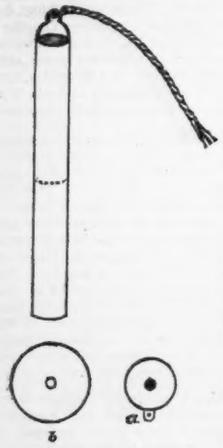
Surgery upon a Tree.—*Mr. H. P. Hubbard*, New Haven Co., Conn., has a favorite Horse Chestnut tree, which, having received some injury when young, had begun to decay. A portion of the trunk had rotted away, leaving a hole about eighteen inches long, and some six or eight inches wide and deep, and this was increasing in size. Wishing to save the tree, Mr. H. carefully dug out all the rotten wood, fixed some boards in front of the hole which was filled up full with cement, mixed thin enough to be poured in. The bark is now growing over the cement, and promises to completely cover it and conceal the injury.—We give this as a hint to others, who may have trees similarly injured, that they would like to save. Common mortar has long been in use for plugging up holes in trees; cement is doubtless much better. Success in the operation will largely depend upon the thoroughness with which the decayed matter is removed; only clean sound wood should be left.

Cut-Worms.—*H. W. Martin*, Windham Co., Conn., asks us: "Is there any way to get rid of cut-worms, other than to hunt and kill."—This is in brief the purport of many letters we have received this season. Dr. A. Oemler, of Georgia, having suffered severe losses from the abundance of cut-worms, tried various remedies. He gives the following as the best remedy he has found. Cabbage or turnip leaves are dipped in a mixture of a tablespoonful of Paris Green to a bucketful of water, which is kept well stirred. Another method of poisoning the leaves is, to first moisten them, and then dust them with a mixture of one part of Paris Green, to twenty parts of flour. The poisoned leaves are placed fifteen or twenty feet apart, both ways, all over the field, taking care to place the leaves prepared with the flour mixture, dusted side down. The Doctor quaintly remarks: "Two such applications, particularly in cloudy weather, at intervals of three or four days, will suffice to allow the cut-worms to make away with themselves, which they generally do with perfect success."

Castor Oil Beans.—*Mr. R. B. Brown*, the President of a large Oil Pressing Company at St. Louis, Mo., writes us with reference to an item in our columns. The company still loans seeds to farmers, and contracts to buy the crops either at a fixed price, or at the current rates at harvest time. There are, however, not at present any restrictions upon the trade in the beans, but they are bought and sold and consigned to dealers the same as any other produce. The prices at St. Louis the past spring and fall, have been from $1.75 to $2.00, and during the past fifteen years, they have ranged from $1.00 to $4.00 per bushel. There is always a demand for them at St. Louis, and the market requires about five hundred thousand bushels annually. Mr. Brown thinks that there are few products so useful to a farmer in a new country, or which, in the absence of railroads, he can so profitably haul a long distance to market, as the Castor Beans, which always bring ready money. In the printed directions sent for treating the crop by Mr. B., it is advised to drop eight or ten seeds in each hill, rather than two or three as stated by us, though but one plant is finally left.

A Bored-Well Bucket.

On the Western dry plains, where water can be reached only at the depth of from seventy to one hundred and twenty feet, the sinking of a well is no small matter. The well is usually bored, and a six or eight-inch zinc pipe inserted. No ordinary pump can be used, but water may be drawn by means of a "bucket," as shown in the engraving. The bucket, which is only very little less in diameter than the well-pipe, consists of joints of zinc-pipe soldered together, with a stiff bail at the top, and a valve at the bottom. The bottom itself is a circular piece of soft wood, usually pine, with a hole in the centre nearly two inches in diameter. On the upper side is a piece of stiff leather for a valve. *b* represents the bottom, on a larger scale than the bucket, and *a*, the leather valve. To stiffen the leather, fasten a convex block of wood on the upper side by means of a tack from beneath, and screw the whole by the shank to the bottom piece. The valve is so simple in construction that any repair is easy. In use, a windlass is employed. As the bucket reaches the top, it is pulled to one side and set vertically in a trough. A peg two or three inches high rises from the bottom of the trough which lifts the valve and allows the water to escape. This apparatus is economical and has proved very satisfactory in daily use.



BUCKET FOR A BORED WELL.

Dog Law.

A valuable shepherd dog belonging to a farmer in Northern New York, while crossing over a neighboring farm, got into an altercation with the neighbor's bull dog, and was so roughly handled in the fight which ensued, that he died in consequence. The owner of the shepherd dog wishes to know whether he can recover its value from the owner of the bull dog. He says that his dog had a gentle disposition, and was not given to fighting.

It is very doubtful whether, under the circumstances, the value of the dog could be recovered. At the English common law, dogs were not regarded as having intrinsic value, and they could not be the subject of larceny (4 Blackstone, 236). But this is not the present American doctrine, for there are now many cases in which damages have been awarded for the unlawful killing of valuable dogs (109 Mass., 273; 60 Ill., 211). In these cases, however, man has generally had a hand. The reported decisions involving the law of dog fights pure and simple, in which man has not been present as a modifying influence, are not numerous. There is fortunately one, a New York case, in which the facts were nearly identical with those above stated, and in that the learned judge discourses as follows:

"**The branch of law applicable to direct conflicts and collisions between dog and dog, is entirely new to me, and this case opens up an entirely new field of investigation. I am constrained to admit total ignorance of the code duello among dogs, or what constitutes a just cause of offense, and justifies a resort to arms, or rather to teeth for redress; whether jealousy is a just cause of war, or what different degrees and kinds of insult or slight, or what violation of the rules of etiquette entitle the injured or offended beast to insist upon prompt and appropriate satisfaction, I know not, and I am glad to know that no nice question upon the conduct of the conflict on the part of the principal actors, arises in this case. It is not claimed upon either side, that the struggle was not in all respects dog-like and fair. Indeed, I was not before aware that it was claimed that any law, human or divine, moral or ceremonial, common or statute, undertook to regulate or control these matters, but supposed that this was one of the few privileges which this class of animals still retained in the domesticated state; that it was one of their reserved rights, not surrendered when they entered into and became a part of the domestic institution, to settle and avenge in their own way, all individual wrongs and insults, without regard to what Blackstone or any other jurist might write, speak, or think, of the 'rights of persons' or the 'rights of things.' I have been a firm believer with the poet in the divine right of dogs to fight, and with him would say:

Let dogs delight to bark and bite,
For God hath made them so;
Let bears and lions growl and fight,
For 'tis their nature to.

***Whatever may have been the character and habits of the victorious dog, there is no evidence that he was the aggressor, or in the wrong, in this particular fight. The plaintiff's dog may have provoked the quarrel, and have caused the fight; and if so, the owner of the victor dog cannot be made responsible for the consequences. There is no evidence that the defendant's dog was a dangerous animal, or one unfit to be kept. The cases cited, in which dogs have attacked human beings, although trespassers, and the owners have been held liable, are not applicable. It is one thing for a dog to be dangerous to human life, and quite another to be unwilling to have strange dogs upon his master's premises. To attack and drive off dogs thus suffered to go at large, to the annoyance, if not the detriment and danger of the public, would be a virtue, and that is all that can be claimed, upon the evidence, was done in this case. Owners of valuable dogs should take care of them, proportioned to their value, and keep them within their own precincts, or under their own eye. It is very proper to invest dogs with some discretion while upon their master's premises, in regard to other dogs, while it is palpably wrong to allow a man to keep a dog, which may, or will, under any circumstances, of his own volition, attack a human being. If owners of dogs, whether valuable or not, suffer them to visit others of their species, particularly if they go uninvited, they must be content to have them put up with dog-fare, and that their reception and treatment shall be hospitable or inhospitable, according to the nature, or particular mood and temper at the time, of the dog visited. The courtesies and hospitalities of dog-life, cannot well be regulated by the judicial tribunals of the land." (Wiley vs. Slater, 22 Barb., 506).

In Michigan there was a statute requiring the owner of every dog to procure a license for it, and keep it collared, and making it lawful for any person to kill any and all dogs going at large, not licensed and collared according to the provisions of the act. While this statute was in force, a large dog meeting a small but valuable one, and observing it not to be properly collared and licensed according to law, proceeded to execute the law upon it by killing it forthwith. The owner of the slain dog brought suit against the owner of the canine executioner, who endeavored to shield himself under the provisions of the statute. But the court said:

"A statute under which a party is, in so summary a manner, to be deprived of his property, by having it destroyed, should not be extended by construction. That dogs have a value, and are the property of their owner, cannot be well denied at the present day, whatever may have been the rule heretofore. And without questioning the power or the State to prescribe such regulations as may be deemed necessary and proper to prevent injury being done by them, yet we cannot say that where the legislature has authorized persons to kill dogs found running at large contrary to the act, the authority thus given to persons can, by construction, be so enlarged as to embrace animals also." (34 Mich., 283).

The foregoing quotations indicate in a general way, the state of the law upon this subject. It is safe to say, that in the case of our inquirer, it is doubtful whether there could be a recovery of damages. The dog at the time of its injury was really a trespasser. It was at least out of its master's control, on an expedition of its own; and if its master allowed it thus to go about, he must take the consequences of such dog fights as it may engage in. It seems, too, that it matters not whether it is, or is not the aggressor in such fights. A dog has its right to drive other dogs off from its master's premises, and if in so doing it injures them, there is no liability on the part of the master. It would be different if the master himself injured the prowling dogs. A man has no right to kill a dog simply because he finds it on his premises, even though he suspects it has been doing mischief (60 Ill., 211). If the dog is known to be a ferocious and dangerous one, and is permitted to run at large by its owner, or escapes through negligent keeping, its owner having knowledge or notice of its vicious disposition, then any person is justified in killing it (13 Johns, 311). So, also, one may kill a dog that has been bitten by a mad dog, or that for any other reason is dangerous to human life (17 Barb., 561), but this is the limit of the right. One cannot set traps for dogs, or leave poisoned meat for them, for in either case he will be liable if they are thereby killed (9 East, 277). Where two dogs get to fighting by reason of their propensity to fight, as dogs often do, it is safe to say that neither owner is liable for consequences.

Where one keeps a dog which he knows has a dangerous and ugly disposition, it is his duty to so restrain it, that no harm can come from its evil propensities. He will be liable if he fails to perform this important duty. And the rule will apply where other dogs are injured, unless it can be clearly shown that the injured dog was trespassing, or that it was engaged in a common dog fight.

A Wire Tightener.

Mr. W. Fulmer, Allegheny Co., Pa., sends us a model of a wire tightener, from which the accompanying engraving is made. It consists of a long

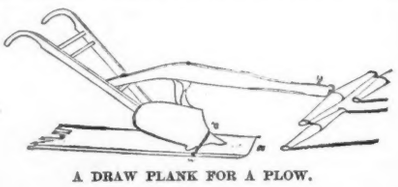
wooden lever, with two pieces of iron fastened to it, as shown in the cut. The ends of the iron parts facing each other are made rough, to firmly hold the wire, which passes between. Though similar wire tighteners are furnished by the wire manufacturers, we present this illustration in order to enable every farmer, who has not one, to make a convenient and serviceable tightener for himself.

Kill the Late Weeds.

The fight with the weeds in the corn-field should not stop with the cultivator. We have frequently seen farmers strive manfully against the pests until midsummer, and then, through negligence, subject themselves to annoyance through the next season. Some weeds have a limited season of growth, and if kept rooted out until midsummer, will rarely come up again; others continue growing until severe frosts come. An old Illinois farmer said a cockleburr would come up in the morning, grow until four in the afternoon, and mature seeds before the frost could kill it that night. This is an exaggeration, yet the cockleburr must be fought until there are heavy frosts. The velvet-leaf, Jimson, and rag-weeds, will commence growth almost as late. Weeds are very prolific, and an occasional one gone to seed in the corn-field, will insure a good crop the next season. Corn should not be cultivated after it is tasseled, but the weeds can be cut out without disturbing the soil. For this purpose we have seen a short scythe used, but we much prefer a hoe with a sharp edge.

A Plow Plank.

A convenient device for moving a plow from one part of the farm to another, is shown in the engraving. It consists of an inch and a half plank,



A DRAW PLANK FOR A PLOW.

one foot wide and eight feet long. The front end, *a*, is rounded so that it may slide along easily like a stone boat. A piece of stout chain, eighteen inches long, is fastened to the sides of the plank at *b*, *b*. The point of the plow is placed under this chain, and is held there when the team is moving. A man standing on the rear end of the plank, can hold the plow and drive the team. A plow thus "shod," will easily pass over a meadow or lawn.

The New York Fishery Commission.

ROBERT B. ROOSEVELT.

The first Legislative enactment in reference to the artificial culture of fish was passed in the State of New York in the year 1868. It was followed up in the succeeding year, that of 1869, by the creation of a Fishery Commission, consisting of ex-Governor Horatio Seymour, Seth Green and Robert B. Roosevelt. Mr. Green withdrew in order to accept the superintendency of the work, and Mr. Seymour subsequently resigned. The Board today is composed of Robert B. Roosevelt, the President, Gen. Richard U. Sherman, Secretary, Mr. Eugene G. Blackford and Mr. William H. Bowman. The first work done by the Commission was the hatching of 2,604,000 shad, 280,000 salmon-trout and 1,000,000 white-fish in the year 1870. It was not until the year 1875 that the Commission was authorized to purchase a State Establishment and commence the breeding of trout. The place chosen for this purpose was the old hatchery which had once belonged to Seth Green, and where he had achieved his reputation and made the first real successes in fish breeding in this country. It had been sold to Mr. Collins, but as it was regarded as one of the most eligible sites in the State, for such an enterprise, it was purchased at a cost of fourteen thousand dollars, and put at once in efficient and practical, but by no means showy, order. The record of the tumble down shanties, and board-banked ponds, is far from a discreditable one, and will answer the question often and properly asked, whether fish culture has paid.

It was stated by the Hon. Theodore Lyman, at the last meeting of the Fish-Cultural Society in Washington that $1,300,000 had been expended in fish culture in this country alone. If so, but a very small portion of this vast sum has been expended in the State of New York, and the larger part of it has been expended by the United States Commission, in scientific investigations, in displays at foreign exhibitions, in studying the habits of fish, in printing learned disquisitions on ichthyology, and in exploring the bottom of the ocean for new forms of piscatory life, all proper expenditures, but cannot in any way be construed into fish culture.

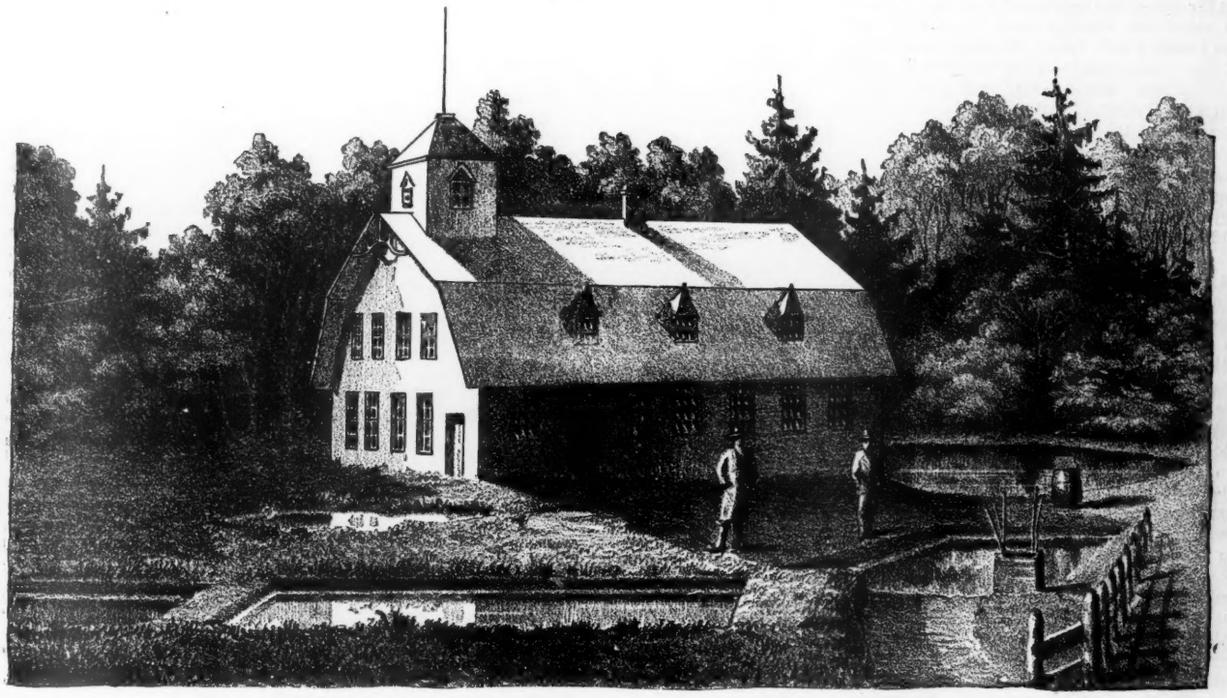
The amount of money expended by the New York Commission from the year 1868 to 1883 inclusive is $206,131.93, including the sum paid for the hatchery house at Caledonia, and the fitting up of a subordinate establishment at Cold Spring on Long Island. For thirteen years there has been an annual distribution of fish—a year being required to commence operations, and one being lost by the veto of the appropriation by Gov. Cornell. During that time there have been hatched, and turned loose, in their native or other appropriate waters in this State, 55,554,300 shad, 11,519,000 salmon trout, 6,909,200 brook trout, 4,499,000 California trout, 45,300 hybrid trout, 2,000 Kennebec salmon, 678,000 California salmon, 18,000 land-locked salmon, 2,480,000 white-fish, 900,000 frost fish, 34,920 mature black bass, 3,000 mature pike-perch, 155,000 sturgeons, beside other minor fish. The first distribution of brook trout was made in 1874, when the Establishment that was afterwards purchased was leased with a view to its subsequent acquisition.

The California or rainbow trout all came from one lot of three hundred eggs purchased in California from a private individual, and received not in the best of condidion. The first distribution was made in 1879, and some of the original stock are still living, and promise to keep up their fertility. The hybrids are a cross between the lake trout and brook trout, and promise an improvement on both species. They have shown themselves to be abundantly reproductive, although, among the eggs, are found more unimpregnated ones than among the pure breeds of either species.

The Kennebec salmon did not seem to be wanted in any part of the State, and so, although many were hatched, they were turned loose in Caledonia Brook, and no account was kept of them. Little was done with California salmon as it was not found, in a single instance, that they survived their journey to the ocean, or returned to their place of birth. The black bass and allied species are not hatched at all, they are distributed to new or depleted waters. It is found that they can attend to their own reproduction as well as it can be done for them. They have the instinct not only of building their nests, but of watching over and bringing up their young. Indeed it is doubted whether black bass fry could live unless they had the care of their parents. A few pairs of black bass will stock a lake or river if they are not fished out for a few years.

Immense strides have been made in fish culture since the old house was built, and before it was pulled down to give place to the more pretentious structure, shown in the engraving given below. The New York Commission can claim the credit for originating most of these discoveries. Mr. Seth Green seems to have a genius for applying the exact remedy for every need in fish culture, and he has been well seconded by his assistants, and especially by his brother, Monroe A. Green, who is one of the ablest practical fish culturists in the country. He discovered the process of dry impregnation, one of the first great strides in the art, and which was afterwards imported from Europe, whither he had contributed it as a scientific discovery. He afterwards invented the shad-hatching box, which contains the underlying principle of all subsequent modifications of hatching jars, boxes, or implements, taking the idea of the upward motion of water rising from a spring as its foundation theory. Mr. Green introduced the use of layers of trays instead of placing single trays one beside the other, and invented the carrying-box with flannel drawers for the transportation of eggs, the methods of packing eggs still in vogue, and a thousand and one minutiæ, many of which have been imitated and claimed by others. To-day, now that the ancient time-eaten, bug-bored and weather-stained shanty has been replaced by a reputable building, with some pretentions to architectural attractions, and the ponds have been rebuilt with walls which will hold water and trout securely, and in spite of the fact that the State owns no individual right of entrance, and not half enough ground for ponds, there is no establishment in the world where as good work is done as at the hatchery at Caledonia.

Farmers should bear in mind that water-culture can be made a part of agriculture, not that it is expected that farmers should devote their time to hatching the eggs of trout, or of any of the more tender varieties, or of necessity to the hatching of any eggs at all, if they have not the special taste and the leisure, but where there are streams on, or adjoining the farm, they should give their attention to introducing the proper kind of fish, especially such as one of the different species of bass. These will increase rapidly, and take care of their own young, and by devouring useless varieties, will supply food for the table, to say nothing of that which most of us enjoy, a day's sport with the rod. Such fish and full instructions can always be obtained from the Superintendent at Caledonia.

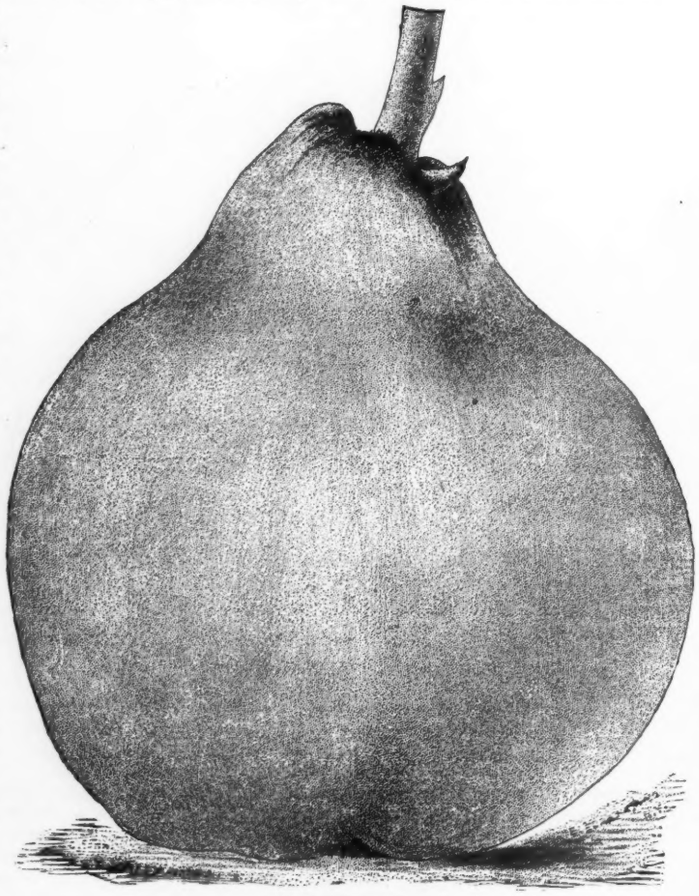


THE NEW FISH-HATCHING HOUSE AT CALEDONIA, N. Y.

Engraved for the American Agriculturist.

Improvement in the Quince.—Meech's Prolific.

From very early days in the history of fruit culture, the "Apple-shaped," or "Orange" quince, and the "Pear-shaped," were the only varieties of the quince regarded as the best for fruit, while for stocks upon which to graft the pear, the "Angers," and one or two others, were commended. These sorts for a long time made up the rather meagre list of quinces. Indeed, it was only when American seedlings were brought to notice, that there was any improvement in the quince. "Rea's Mammoth" was so much larger, handsomer and better than any of the old varieties, that it convinced people that the quince was capable of great improvement, and other new varieties since introduced, have been regarded with favor. Notable among them, are the "Champion," described in these pages when it was first offered, and "Meech's Prolific." All that is known about the history of the variety is, that one of the early settlers in Vineland brought the tree from Connecticut. It then had no distinctive name. The tree finally fell into the hands of Rev. W. W. Meech, of New Jersey, whose long and practical experience with quinces has enabled him to both instruct and entertain our readers. He planted it with his other varieties in order to test it, and it proved to be superior to all. The tree is readily propagated from cuttings, grows rapidly, and comes into bearing very early. Out of two hundred and eight trees propagated last year (1883), fifty-seven bore blossoms the past spring. There is abundant evidence that the variety is properly named "Prolific," as the fruit is so abundant as to require severe thinning. The flowers are unusually large, making the tree when in bloom very ornamental. The obscure pyriform shape of the fruit is shown in the engraving, which is one-third reduced. The fruit is large, those weighing twelve to fifteen ounces are not uncommon, and they have been known to reach eighteen ounces. Eighty average quinces of this variety make a bushel. The fruit is at first covered with a dense whitish down, which protects it from many insect enemies, and when ripe is of a fine orange yellow, with a delicious fragrance. As to the quality of the fruit, there is abundant testimony from those who have tried it. One writer says: "It cooks as tender as a peach." While its leading characteristic is its prolific bearing, this variety, it is claimed, possesses in the highest degree, all other qualities that go to the making up of a first class quince.



A NEW PROLIFIC QUINCE.

Cats on the Farm.

Cats ought to have an honored place on the farm, but too often they have no place at all. This is because they are kept at the house, fondled by the pet-loving children, and fed by the kind-hearted women until they become lazy and worthless. The farmer esteems cats less highly than dogs; but the former are sometimes of the greater value to him. Barn cats should rarely be allowed to come to the house, and never be fed there. All that they need is plenty of milk; compel them to get the rest of their living, and they will find it about the barn, granaries, cribs, sheds, and in the fields. A good mouser is worth ten cents per day about a granary, crib, or barn. Mice not only destroy grain, but make it filthy for stock; they nibble sacks and implements, and do much other mischief. A good cat will destroy large rats as well as the young ones. We have an old Maltese Tom, which gets his living by catching ground-mice in the orchard and garden, and is therefore a valuable cat. At this season, when barns, granaries, and cribs are filled, a cat is doubly useful. Give Tom and Tabby a fair trial, and you will always keep cats. S.

Do Not Gall the Horses.

The rush of mid-summer farm work is very trying on horse-flesh. The side draft of a reaper or mowing machine frequently causes galled necks and shoulders. The usually tough skin of the horse is softened by the flow of perspiration, and a rough, ill-fitting collar, a useless, chafing back-pad, or a projecting buckle quickly produces pain. No one can blame a horse for faltering, when ordered to press its raw and bleeding shoulder against the collar, that will sink into its bruised flesh. To avoid galls, all parts of the harness should fit closely. A laboring man is careful in buying boots of proper size. He could not endure twelve hours of hard labor while his feet were cramped within an unusually small space, or in boots so large that his feet slip in them and wear the skin away by constant friction. As a rule, horses are worked in too large collars. A soft pad placed under such will prevent galling. When the animals are brought in from work, the harness should be removed at once and cleaned, and the necks and shoulders well washed with castile soap and water. After bathing the worn parts at night, rub on some softening oil. Use no oil in the morning. The collar should not be oiled, as it will then gather dirt through the day and form a rough coating, that will chafe the exposed parts. Keep all parts of the harness clean, especially those that press upon the horse, and see that the same is true of the portions of the horse against which the harness presses. It is much easier to prevent than to cure a gall.

Feeding and Care of Farm Animals.

PRIZE ARTICLE.—BY "A WESTERN FARMER."

It is a curious fact that almost every farmer who keeps five or six kinds of stock, gives nearly his whole attention to one or two of them. A man who is fond of horses and cattle, cares little for sheep or hogs; one who likes sheep and hogs knows little about poultry; one who takes pride in his poultry, pays little attention to horses and cattle, and so on. Farmers who thoroughly understand the care of horses, cattle, sheep, hogs, and poultry, feel an equal interest in each, and can make all profitable, are not as common as they should be in this or any other country.

Horses.

STABLE.—The horse stable should be warm in winter, and cool in summer; light, well ventilated, and so arranged that it may be darkened, and have wire screens over the windows to exclude flies. The floor, whether of plank, ashes, or other material, should be dry, and slope back gradually from the manger. The manger and feed-box should be grain tight, with bottom, at least, a foot above the floor. In fly time, darken the stable when the horses are taken in—close the doors and open the windows. Rest and comfort is thus assured, and their value to working horses can not be given in dollars and cents.

FEEDING.—Intelligent observation and practical experiment enable the owner to ascertain how much food a horse should have. Of two horses, of equal size and weight, one may require one-third more food than the other, to keep it in equally good order and working condition. When at steady work, the morning meal may consist of cut hay, and shelled corn and oats mixed; the noon meal, oats and corn, and a little cut hay. At night, feed two-thirds as much oats and corn as at other meals, a few pieces of carrots, and as much uncut hay as the horse will eat. When at rest, feed lightly—just enough to keep in good condition; mostly oats and uncut hay. Clean out the manger and feed-box before each meal. Clean, bright timothy hay is superior to any other for horses. If cut just before blossoming, well cured, and stored in a dry place, it will be devoid of that fine, pungent dust—the pollen of the flowers—found in it, when cut in full blossom. If at all dusty, it should be dampened when fed. In case there is no barn room available for storing, it will pay one hundred per cent on the cost, to erect a shed twelve feet wide, and twenty to thirty feet long for it. The floor may be strong poles or rails, resting on block or brick pillars, eighteen inches high. Oats should be clean and dry, never musty, and fed to working horses in combination with shelled corn. For horses at rest, they may be fed alone. Corn should be well ripened, kept dry, and shelled as fed. It should be mixed with oats, in the proportion of one quart of corn to two of oats. Corn on the ear is productive of lampass, and if the horse has defective teeth, much of it is swallowed without being properly masticated, producing flatulence and colic. One or two carrots cut fine, and mixed with the evening meal, are very beneficial in the absence of grass, as they tend to keep the bowels open and regular. They are most excellent for horses in winter and spring. Bran is a useful article of diet. Wetted, mixed with half its bulk of oats, slightly salted, and fed twice a week, its effects are very beneficial, especially to carriage horses.

Kentucky Blue-grass (*Poa pratensis*) makes the

best horse pasturage in the world. The next best is a mixture of Orchard-grass (*Dactylis glomorata*), Red Top (*Agrostis vulgaris*, and Meadow Fescue (*Festuca pratensis*). Turn horses into the pasture at every opportunity. Nothing does a dry fed, steadily worked horse more good than a few weeks, or even days, on grass.

It is very important that the drinking water be pure. The well should not be in the barn-yard, or it is certain to become polluted. Good cistern water is best, if it can be obtained. Water before meals. If the horse is very hot, give half a pailful; feed uncut hay and rub down. When somewhat cooled and dry, give all it wants, then feed the grain. In summer pump a large trough full an hour before the horses come from the field; let them drink about three gallons each, then wait a moment, and afterwards permit them take all they want.

Salt once a week is often enough on dry feed. When in pasture, it should be placed where the horses can obtain it as desired. Provide plenty of bedding, and see that it is dry. Shake it up the last thing at night, and remove all that is wet or soiled. Straw, forest leaves, sawdust, or any material that is dry and absorbent, is good. Use the currycomb and brush, whether the animal is dirty or not. Go over the animal from head to foot, once a day at least. Be very careful not to scratch or hurt it in the least. Good horses are often made vicious by rough currying. If it is thin haired and tender, use a stiff bristle or wire brush, instead of a currycomb. Wash off the dirt that is difficult to remove, then rub dry with a cloth and brush. Comb out the mane and tail, and keep them smooth. There is much pride in a horse, and it should be promoted rather than restrained.

Harness a horse gently; keep the collar clean and have it fit. Adjust the harness so that no part hangs loose, or chafes. Do not check tight, or use blinders. Fly-nets for horses are invaluable in fly time. A horse will always do its utmost willingly for a kind master. Do not worry the life of a fast, high-spirited horse, by working it with a slow one. After a day's work in summer, turn it into a yard to roll and straighten the limbs. Never let a horse stand out of doors unblanketed after driving in cold weather. Do not worry a horse when driving by continually clucking or talking to him. Teach the animal to start and stop by voice, and to obey a light movement of the reins. A horse may be taught a great deal by an intelligent driver, but the words of command should be few and distinctly pronounced.

Breeding.—Raise good colts, they cost no more to feed and care for than scrubs, and bring over twice as much in the market. The sire should be absolutely sound in wind and limb, and the dam, well shaped, and of good size. Light work will do her no harm; heavy work will. The average period of gestation is three hundred and forty seven days. Keep the dam in a well-bedded loose box, a week or ten days previous to foaling, and feed hay, carrots, bran, potatoes, and very little, if any grain. Do not work her until the colt is at least six weeks old, then keep it in the stable during the day, and let both run in the pasture at night. As soon as the colt shows a disposition to eat, give it some oats and bran, mixed with a little shelled corn and chopped carrots. Provide it with plenty of water during the day. After weaning, treat it like a horse; halter, curry, and handle, in the same manner. Feed it the best you have, and keep its coat smooth, and in good condition, by all means. When two years old, harness, and drive to a light wagon. Trained colts never require breaking, and they are worth from ten to twenty-five per cent more than wild, unbroken colts, simply because their action is already developed under harness, and they may be termed a finished product.

Diseases, Injuries, Etc.—Farmers are not supposed to be veterinary surgeons, and it is rarely advisable for them to attempt to doctor stock, when they do not understand the nature of the ailment; for they are almost certain to do more harm than good. Whenever stock is affected by any disease that is not understood, it is best to refer the matter to a skilled veterinary surgeon at once. There are a few ailments any farmer can attend to; the most common is colic. Feed and water as advised, and colic will be almost unknown. A pint of oil, with one ounce of sweet spirits of nitre, is an excellent remedy. Injections of warm water or soapsuds, and walking about, will frequently cure in a short time. For Scratches, keep the legs clean, and the bedding and stall dry. Should a long spell of wet weather induce this trouble, get olive oil, eight ounces; liquor subacetate of lead, four ounces; carbolic acid, two drams; mix, and apply with a sponge, once a day. Keep the legs and feet perfectly clean and dry until cured. Feed lightly, carrots, bran mashes, etc. Lampass is caused chiefly by hard food, like corn on the cob. Soft food cures it. The man who burns it out with a hot iron, should have his toothache cured in the same manner. To prevent galled shoulders, use a perfect fitting collar. In case the skin on the shoulders is thin and liable to break easily, use a light, wool-faced collar, or a sweat-collar, and bathe the shoulders with strongly-salted cold water, noon and night. If the skin is abraded, apply a lotion, made as follows: Sugar of lead, one ounce; sulphate of zinc, two ounces; rain water, one quart. Give rest until entirely cured. If a horse has been accidentally exposed and taken cold, lost his appetite, is stiff, and has a staring coat, blanket, and put him in a warm, well-bedded loose box. Give tepid water to drink, and feed with a mixture of bran and oats wetted. Once a day, mix with his feed, two drams powdered gentian root, one dram ginger, three drams saltpetre. This mixture is superior to any "condition powder," and is excellent for horses out of condition.

A House for $100.

CYRIL MARR, SELMA, CAL.

It often occurs in these days of preëmption and homestead rights, that a person having a very limited capital, wishes to construct a dwelling with the least possible outlay. To do this requires not a little tact, as well as a fair share of mechanical knowledge. The writer has constructed and lived in such a house for several months. Though small, it afforded fair accommodations for five persons, three adults and two children. The size of the entire structure was twelve by eighteen feet, with walls 12 feet high. Figure 1 shows the exterior of the house. Figure 2 gives the lower story, consisting of a sitting-room nine and one-half by twelve feet, and a kitchen six and one-half by twelve feet. This allows two feet for stairway,

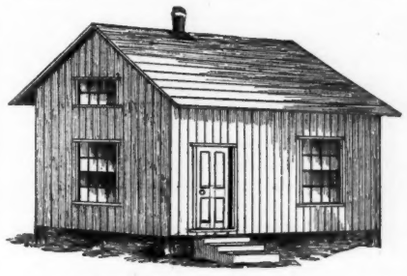


Fig. 1.—EXTERIOR OF HOUSE.

with eight feet between floors, and stairs built as shown. There is room for a passage between the sitting-room and kitchen at one end, and for a closet at the other. Figure 3 shows a bedroom, nine and one-half by twelve feet, and another eight and one-half by twelve feet. This last, when not needed for a bedroom, can be used as a store-room. This upper story is lighted by a half-window in each end of the house.

The Estimate for Material is as follows:

3 pieces, 2 by 4 in., 18 feet long, for sills for foundation.
9 pieces, 2 by 4 in., 12 feet long, for floor joists.
26 pieces, 1 by 6 in., 18 feet long, for floor.
36 pieces, 1 by 12 in., 12 feet long, for two long walls.
8 pieces, 1 by 12 in., 14 feet long, for ends.
8 pieces, 1 by 12 in., 16 feet long, for ends.
8 pieces, 1 by 12 in., 18 feet long, for ends.
36 pieces, 1 by 4 in., 12 feet long, for battens for long walls.
8 pieces, 1 by 4 in., 14 feet long, for battens for ends.
8 pieces, 1 by 4 in., 16 feet long, for battens for ends.
8 pieces, 1 by 4 in., 18 feet long, for battens for ends.
2 pieces, 2 by 4 in., 18 feet long, for upper long plates.
2 pieces, 2 by 4 in., 12 feet long, for upper end plates.
2 pieces, 2 by 4 in., 18 feet long, for plates for upper floor.
9 pieces, 2 by 4 in., 12 feet long, for joists for upper floor.
26 pieces, 1 by 6 in., 18 feet long, for upper floor.
7 pieces, 2 by 4 in., 18 feet long, for rafters.
20 pieces, 1 by 4 in., 12 feet long, for sheathing.
10 pieces, 1 by 4 in., 14 feet long, for sheathing.
4 pieces, 1 by 12 in., 14 feet long, for partition above&below
4 pieces, 1 by 12 in., 16 feet long, for partition above&below
4 pieces, 1 by 12 in., 18 feet long, for partition above&below
9 pieces, 1 by 12 in., 12 feet long, for side wall of stairs.
2 pieces, 1 by 12 in., 12 feet long, for stiles for stairs.
2 pieces, 1 by 12 in., 12 feet long, for steps for stairs.
2 pieces, 1 by 4 in., 18 feet long, for scrub-board.
4 pieces, 1 by 4 in., 12 feet long, for scrub-board.
Assorted 72 feet for door and window casing.
Assorted 36 feet for foundation.

The lumber at the ruling prices here would now cost	$65.00
Shakes (split boards)	7.50
1 door, $1.60; 2 windows, @ $2.00, $4.00; 1 window, $2.75.	8.35
1 lock and 1 pair hinges, $0.65; nails, $4.50	5.15
Lining cloth, $2.50; lining tacks, $0.50; wall paper, $1.00.	4.00
Total	$90.00

The ten dollars short of the amount mentioned, will allow for any minor changes that may make

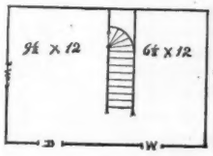


Fig. 2.—FIRST FLOOR.

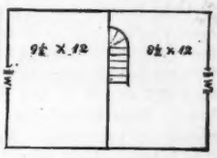


Fig. 3.—UPPER FLOOR.

the plan conform to the desires of the builder; or, in the event of extra hire or freight-bills, this amount will be sufficient. The plan and estimate here given presumes that the owner does his own work. There is no particular skill required. Even these figures may be cut down, as old lumber can sometimes be procured for foundation and braces. Sheathing should project six inches at the ends of the building. Strips, one by four, nailed between pieces of sheathing and lengthwise, if rafters, will make the upper story tight enough for comfort.

A Money-Crop for Next Spring.

In the spring every one wants greens of some kind, and they meet with a ready sale. By far the best and most profitable crop of this kind is spinach. It is easily raised, and farmers who supply the markets will find it very convenient to have a crop that will bring ready money early in the season. To have a crop of spinach next spring, we must begin now. The seed is not to be sown until next month, but the preparation of the soil may be made this month. No matter how highly manured the land may have been for the previous crop, it can hardly be too rich for spinach, and a liberal dressing of manure well worked into the soil will pay. The soil should be brought into a fine condition, by thorough plowing, harrowing, and rolling, and be ready for sowing next month. If to be treated as a farm crop, mark out the rows at distances suited to the narrowest width of the cultivator, say twenty-one to twenty-four inches apart, and sow an abundance of seed. Set the drill to drop the seeds half an inch apart or less. Some cultivators prefer to sow by hand. What is of special importance in sowing spinach, especially at this season, is to bring the soil in close contact with the seeds. This may be done by the use of a moderately heavy roller, or by going over the rows and pressing the soil firmly upon the seed with the feet. Attention to this, especially in a dry season, may make all the difference between a good stand and a poor one. The time for sowing in the climate of New York City, is from the first to the fifteenth of September; in cooler climates the first named date is preferable. When the plants are up, the spaces between the rows must be kept well cultivated, and the plants thinned to two or three inches in the row. This will leave the plants twice as thick as they should be, and a final thinning to five or six inches should be made. The plants at this thinning should be carefully cut out with a knife or with a sharp, three-cornered hoe, and the thinnings used or marketed. At the approach of winter, in all severe localities, it is well to give the spinach a light covering of straw or other litter, to prevent injury from hard freezing. There is no difference in the hardiness between the kinds catalogued as "winter" and "summer" spinach.

Australian Wool Farming.

The great staple of Australia, fertile as the island continent is in most natural and cultivated productions, is wool. Except where it is actually a desert, the country offers the best grazing for sheep in the world. Open pastures and park-like woods shadowing a perennially rich greensward, extend in vast stretches over a land whose only drawback is scantiness of water. But where the crops of the soil will not flourish, those on the soil will. The millions of acres which the farmer cannot make productive, bring wealth to the grazier.

Previous to the gold discoveries, thirty odd years ago, Australia was essentially a pastoral country, and since the gold fever has become a thing of the past the farmer has supplanted the miner again. Some of the greatest of the vast fortunes won by wool growing, originated in the mining excitement. Farmers and graziers abandoned their farms to look for swift wealth in the diggings, and wise men bought them in and thus laid the foundations of permanent prosperity. The writer met one sheep king in Queensland, who, in 1852, was a laborer on a farm. The owner caught the gold fever, and his hired man bought him out with his savings. As one farmer after another in the district succumbed to the craze, the long-headed laborer borrowed and scraped together money enough to purchase their estates at the low prices to which all property but mining claims had fallen. To-day he owns an estate larger than some European principalities, and counts his wealth by millions. One of his foremen is a son of his old employer.

Australian shepherds lead a life nearly as patriarchial as a Tartar's. A wild and lonely existence is theirs, and only men of iron physique could undergo it. Two shepherds always chum together, one acting as hut-keeper, while the other is out upon the range. They travel from range to range as the grazing grows poor, and the country is dotted with the rude slab huts they find shelter in. Their fare is of the rudest, consisting of "damper," a sort of bread made of flour and water, baked in the wood embers, mutton and tea. Of late years the luxury of canned meats occasionally falls to their share. Tobacco is their only luxury, and a battle with the fleas which infest their huts, their only rest. It is not so surprising

THE "WOOL-WORM."

that such men celebrate a visit to town with a debauch, and like our own cow-boys, sometimes become a terror to the peaceful townsmen.

The Australian wool-grower's greatest enemies are the catarrh, the scab, the foot-rot, which is caused by marshy grazing grounds, bad servants who neglect the flocks, and the wild dogs. The latter were once a formidable foe indeed, but their destructive hordes have been greatly decimated by the hunters, who shot them by thousands, to obtain the bounty offered for their scalps. These dogs will hunt a flock of sheep as systematically as men conduct a drive of deer. They surround and close in on them, rending and devouring all in their path. Great flocks are often stampeded by them, when the sheep run until they drop exhausted, or struggle into some stream and are drowned.

The shepherd's dog is as sagacious and true a friend to his woolly charges as the wild dog is a relentless foe. Sheep raising has produced in Australia a peculiar breed of dogs, different in

AN AUSTRALIAN SHEPHERD.

many appearances from the European shepherd dog, but akin to it in all good qualities. These dogs seem to know all the sheep in a flock. They will hunt for stragglers miles away from the hut, and either drive them in or watch them, if they happen to be exhausted, until they gather sufficient strength to walk. It is a common thing in traversing the grazing country, to come upon one of these noble brutes on guard over a strayed or broken down sheep, and woe betide the stranger who attempts to lay hands on his helpless protege.

In addition to the wool crop, the Australians derive a huge revenue from the boiling down of sheep. Boiling down was originally resorted to on the occasion of a panic forty years ago, when sheep could not be sold in the local market. Then the surplus of the herds was reduced to tallow, and a market for that commodity opened in England. Some years after, huge canneries for the preservation of the mutton were started with satisfactory results. Now the sheep grower makes capital out of the flesh and fat of his flocks, as well as their wool. Another extensive trade is the preparation by salting and smoking of mutton hams, which are used for ship's food throughout the Indian seas.

The busy time on the Australian ranges is in the shearing season. As that time comes around, the wool tramps put in their appearance, tramping over the plains towards the different sheep stations. The wool tramp is one of those nomads like our harvest tramps in the West, whose labor is very useful when it comes in the right time, and who at all other periods are utterly useless beings to themselves and all the world.

A sheep station is the centre or headquarters of a range. Here the proprietor lives, surrounded by his overseers and storekeepers. In addition to the proprietor's and his subordinates' houses, the station consists of a few shops, some barracks for the shepherds, and paddocks, covering hundreds of acres, all fenced and posted as stoutly as can be. The largest buildings at a station are the shearing and sorting sheds, and all important stations now appear to have huge steam presses for bailing the wool. At the smaller stations the hand-press is used. Small sheep-owners drive their herds in to the large stations and there sell the wool.

This disposition of the wool-clip, has given existence to a character in the shape of the buyer of wool, who is known among the small growers as the "wool-worm." The wool-worm will buy a clip while it is yet on the flock, and the improvident sheepmen take advantage of this and pay usurious interest for the accommodation. These wool buyers have the country districted. One never trenches on the other's ground, and one and all are said to be willing to advance money on the clips several years ahead. The result is that many flocks are under perpetual mortgages, and in the end fall into the hands of the usurers, who sell them at once, for they find much more profit in buying wool than in raising it.

As the shearing season comes around, the flocks are driven to the stations where they belong. Watering carts keep the dust laid, as day after day the woolly legions come marching into the paddocks. If the weather is rainy, they are sheltered in the large "sweating sheds," into which from two thousand to three thousand sheep can be packed at a time. When the campaign is ready to open, the "yarders" are mustered to duty, which is to keep the shearers supplied with subjects. Then the animals pour into the shearing sheds in a steady stream. They are kept in pens there until sheared, and then turned loose to be marked and penned until they are driven out on the ranges again.

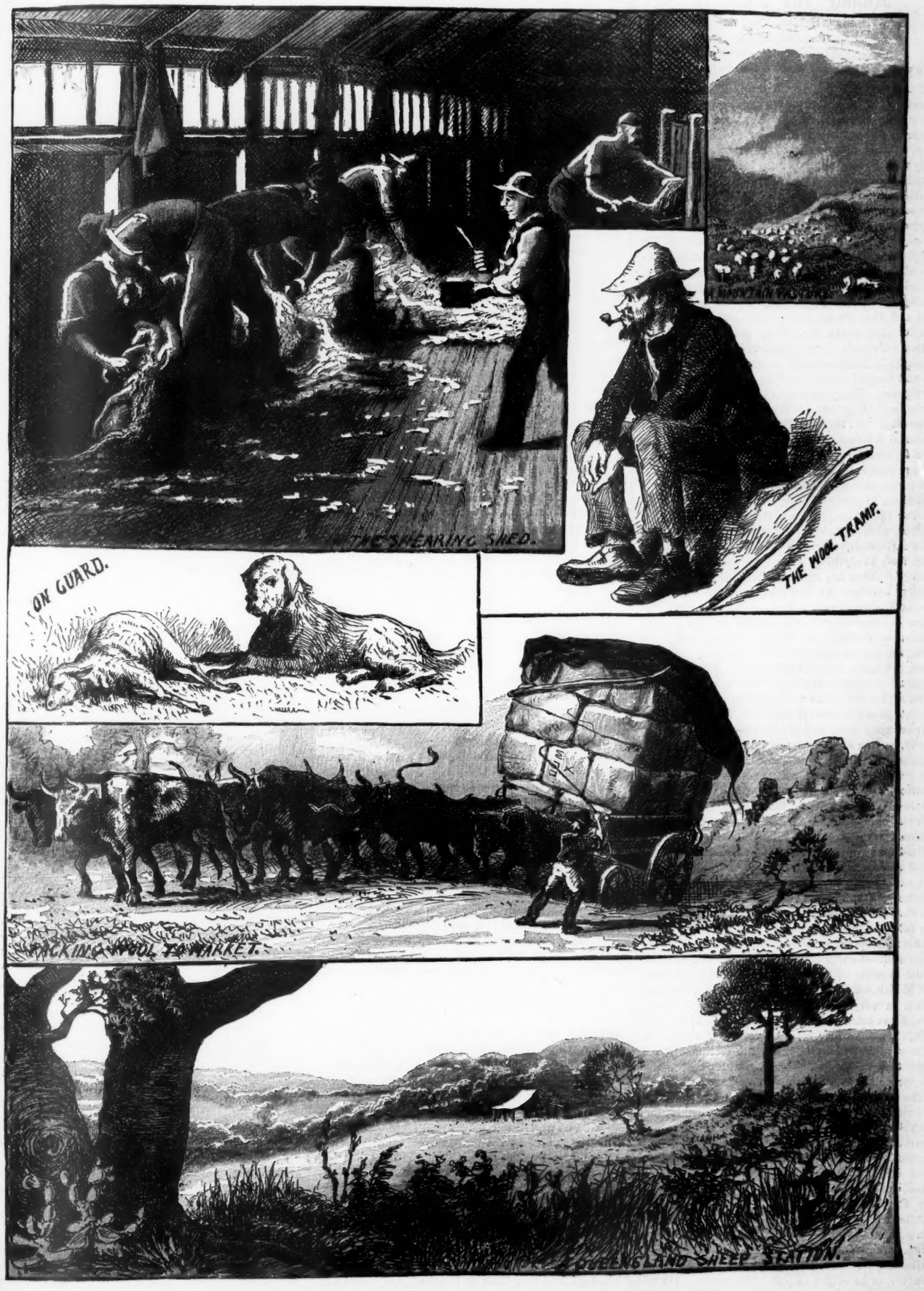
The fleece having been clipped, is passed to the wool tables, where it is sorted and "skirted," or cleaned of the rough dirt which adheres to it. Australian wool is divided into first, second, and third qualites, before it goes to the press.

The laborers at the station work day and night in shearing time. From the proprietor and manager, down to the wool tramp, they enjoy only the briefest rest. The wool having been pressed, the bales are weighed and marked with the distinguishing marks of the station. The transportation to market, or the nearest railroad station, takes place in huge platform wagons, drawn by six or eight horses or oxen. These wagons carry from thirty to forty bales to a load.

The station fills up with pedlers of all sorts of wares, not forgetting the "sly grogsman," who is the master of a bar-room on wheels. Between these and the regular shop-keepers, most of the money made by the laborers at the shearing, is gotten rid of before they leave. The shearing over, the clipped flocks straggle out to the ranges again, the wool tramp takes up his stick and departs, the proprietor makes his annual trip to the nearest seaport to settle business with his agent,

A PROPRIETOR.

and the station goes to sleep again. The lives of the sheep kings of Australia are not subject to the privations to which the shepherds are exposed of course, but they have also many uneasinesses and discomforts attached to them. Existence at the stations is lonely and monotonous in itself, and the fare, however abundant, by no means varied or elegant. Few of the sheep kings live as well as the American farmer, not because they cannot afford to, but because all their money cannot buy a luxury or comfort which does not exist. Their flocks and their wool-clip form the topics which engross them.



AMONG THE AUSTRALIAN MERINOES.

Drawn and Engraved for the American Agriculturist.

Among the Farmers.

New Series.—No. 4.

COL. MASON C. WELD.

How to be of Real Use to One's Neighbors.

Farmers are to be depended upon, take them all together, to be conservative to the detriment of their own interests, even when special effort is made to demonstrate to them in a *quasi*-benevolent way, in what course their real interest lies. The only way the agriculture of any long-settled section is radically changed, is by individuals coming in, and beating the old farmers at their own trade, raising better crops, better stock, making better butter and cheese, beef and pork, and of course making more money. A man if he really wants to benefit his neighbors, makes a great mistake if he undertakes to enlighten them, to show or explain his methods, theories, etc. No, he must make a mystery of it, telling them that they cannot do the same; that this and that are his secrets; that they must find out for themselves, etc. They must be absolutely driven off their own ground before they will change. This is actually occurring in all the oldest and longest settled sections, by the incoming of foreigners. The young men have deserted the old farms, and all around thrifty foreigners are getting possession of them. The Irish—quick, smart, practical fellows—get together a little money, buy an old place for a little cash, and give a mortgage. Things may look like distress, but wife, and boys, and girls, all work in the field as well as in-doors, and there is money enough to meet the interest on the mortgage, to keep the family in decent clothes, with a liberal remainder for the church.

The German, when he buys, improves things very fast; everything is neat about his place; his living expenses are not half those of an American family, and yet he lives better. He has more pleasure in his food and in his amusements, and more enjoyment with his family, and, as a rule, does more reading. He begins with a poor little farm, but is ever improving. He goes out to day's-work, while his wife runs the farm. If there is any teaming, plowing, digging of cellars, and that sort of work, he finds time to do it, and so he turns an honest penny wherever he can. He knows that manure goes twice as far, aye, ten times as far in a liquid, as in a solid state, so his garden, and cabbage patch, and tomatoes, and all those half garden crops, are watered with manure water. Thus a little manure goes a great way, and he beats the whole neighborhood with his "truck," which pays him three or four times as much as any crops the native American farmers about him raise.

Gradually they get into doing similar things on a small scale, then on a larger, and finally trucking and small fruits, and special crops of one kind and another, are, so to speak, all the rage. Meanwhile, the German has become a rich man, and if he does not fall into that besetting sin of thrifty foreigners —tavern-keeping, or liquor-selling on a small or large scale—he will become a prominent and influential member of society. Scandinavians, Scotch, and Welsh, effect the communities into which they come, in very similar, but distinct ways. As a rule, I can learn more from Germans and Scotchmen, than any other class of foreign farmers. It is in raising truck-crops that the Germans excel, and it is in live-stock and fodder-crops, that the Scotch and English farmers are superior.

The desire to make money is such an absorbing one among the middle class of Great Britain, that both Scotch and Welsh are apt to be too sharp, or smart for their own good, and this works disadvantageously to them in many cases, for communities soon learn to put themselves on their guard. There seems to be less of this sort of thing among the English, German and Swedish farmers.

After all, no new-comer can influence an American community in the Northern and Middle States like a progressive American, but as I have already intimated, he must not set himself up as an instructor, or he might as well teach mules. He will have a great deal to contend with. In a real old-fogy district, bad roads, poor schools, and either puritanism of a cast-iron stamp, or loose morals prevail, and in many sections, both — society being divided between the "Unco Gude," and those of ultra liberal tendencies, in morals and politics.

Calves—For the Dairy or for the Shambles.

I went through, as they say, a lot of veal-calves the other day, they were tolerably fat, a uniform lot about six to eight weeks old, nearly half heifers. It struck me I would see what they promised to make if they could become cows, and I was surprised at the number of unusually promising ones. There were no Dutch heifers (Holsteins), or half-breeds among them. There were many Shorthorns and Jerseys, a few evidently of Ayrshire blood, and of course a good many—fully one-half—of no obvious breed, (natives). Not long before I had been at one of Kellogg's sales, and I verily believe that I could have picked out from these calves, which were all veal before the next day, those which would have proved better milkers, if not better butter makers, than nine-tenths of those sold at one hundred to five hundred dollars each. The farmer who does not know enough not to kill or sell to the butcher, a calf that will make a twenty-quart cow, needs to take lessons of somebody in the a-b-c of his business. Such a man has probably several cows in his herd, which never give over ten or twelve quarts of milk, and very likely poor milk at that.

How to Recognize a Twenty-Quart Cow

when she is only six weeks old, is hard to tell, and yet I think not so very difficult to do. I do not know that I can tell how. I like a thrifty calf, with a good sized head, which is narrow and long, broad in the muzzle and between the eyes, and narrow between the horns. I do not care if the limbs are "strong," as they say in Jersey, and perhaps coarse, but they must be straight; and the tail may be even quite coarse at its setting—this indicates constitution. Then, from the withers to the hips there should be a straight upward slope, so marked that if you see the front half of the calf, you will think she is a small one, while if you see only the hind quarters and loin, you will think her very large. In fact, in point of symmetry, the front and hind quarters ought not to match, and the latter should be by far the larger. I prefer long-bodied, open ribbed, flat-sided, deep-bodied calves. The skin should be loose and flexible all over the body, so that one can grasp a handful almost anywhere. The coat must either be long and silky, a little rough perhaps, but not harsh, or it should be soft and furry. With all this, you should find the teats of good size, well spread, and all the skin about them, before and behind—that which will cover the udder—loose, soft, and elastic, showing, as the Scotch say, "plenty of leather." Such a calf will make a good milker if she is bred at a year to fifteen months old, and after her first calf goes farrow (but not long dry), for a year, or nearly that time, to give her a chance to grow. I say nothing about the escutcheon, because I do not know very much about it, and do not believe in half that is said and written about it. Still I must say I would prefer a good broad, well-winged escutcheon, of the Flanderine type, for if the escutcheon shows anything, it indicates staying power, which is perhaps the greatest merit a cow can have. Many a twelve or fourteen-quart cow will beat a twenty-quart one in the long run, especially in her butter record, the true test of a cow's value.

The amount of butter that a cow will give is indicated by no tell-tale marks that I know of. That must be judged by the pedigree and dam's record, if a calf, or by the scales. The unctuous feel of the hide, its pliability, the abundance of yolk, (the yellow, soapy oil at the roots of the hair inside the ear and in the "butter ball" in the end of the tail) indicate health, and perhaps a tendency to fat secretion, either as butter or fat. But some of the poorest butter yielders I have ever known, showed the most of these qualities, and some of the best had very little to boast of, just enough of oil in the skin to indicate good health, and that the skin was performing all its important functions well.

Color in the skin indicates color in the butter. I have never seen a yellow-skinned cow, that gave pale butter, or a very rich-colored skin in a cow, that did not give yellow or yellowish butter all through the winter. When the yolk, which gives this color in the ears, tail, and skin, begins to show in a calf, it will probably never show less, and what butter the cow gives will be of good color.

The New Dairy Law of New York.

I have heard much discussion among farmers in regard to the working of the New Dairy Law. Some holding it to be impracticable of execution, others heartily approving of it. The Law seems to me to be a fairly complete one, albeit somewhat cumberous, and leaving too much to the interpretation and decision of the Commissioner. It defines clearly what shall be considered as pure and wholesome milk, stating the quantity of solids, including fat, which must be contained in the milk at not less than twelve per cent, while the amount of fat must not be less than three per cent. Besides it declares that milk produced by cows fifteen days before, and five days after calving, or by cows fed upon food in a state of fermentation or putrefaction, "or upon any unhealthy food whatever," to be unwholesome and impure, without reference to its analysis. Ensilage from silos, is made a special exception among fermented foods. Thus it would seem, that the use of brewers' grains, starch feed, glucose feed, and such like articles of feed is pointedly forbidden for the production of milk for sale, or for delivery to creameries or cheese dairies.

Many farmers have felt regret in being obliged to use the articles, because otherwise they could not compete in the production of milk with those who did, even though they knew well that the milk produced was inferior, if not unhealthful. These, and they are our best milk producers, rejoice at the law. Some have cancelled their contracts for grains, on the ground that they are prohibited using them by law. Others will not pit the grains as usual, for fear that they will thus render themselves especially amenable to the law. Others use the grains and pit them as usual. This system of pitting consists in buying brewers' grains in large quantities, when they are very low, and filling pits, like cisterns, with them, well tramped down and covered as nearly air-tight as possible. The grains will keep for months without rotting. They become very sour, and yet are eaten with avidity by cows. The milk produced by these grains, whether sour or fresh, is watery, and lacks richness and good flavor. This sourness is the direct result of fermentation, and increases with age. Access of air, or exposure of the mass to the air, causes rapid decay. The substances pass from fermentation to putrefaction with astonishing rapidity. The brewers' grains come warm from the "mash," and never cool; before the heat of the mash-tub is gone, that of fermentation begins. They are partly cooled off when loaded into railroad cars, but soon heat again. If they are two or three days on the cars—say shipped Friday, arrive Saturday, and cannot be unloaded until Monday, the whole surface to the depth of three to six inches will be gray with mould, black in spots from decay, and the interior as hot as a person can bear his hand in. The sweet smell of fresh grains is rapidly lost, and the sour, unhealthful mess which is left, is utterly unfit for milch cows. The law wisely discriminates against such food, and if carried out will force the drying of these articles, if to be fed, or their use as manure.

REMOVING STUMPS.—There are numerous methods of removing stumps, and there are many cases when it is best to use none of them. It will frequently cost more to rid a field of stumps than the land is worth after the stumps are removed. The use of a chemical to induce decay, or salt-petre to make them burn, is unprofitable, and any method of so-called electricity is mere clap-trap, and money spent in driving nails and fixing up wires is thrown away. Boring the stumps or making a hole beneath them, and blasting them with dynamite, or giant powder, is the quickest method, but one needs to count the cost before engaging in this work.

A Corn-House and Granary.

J. S. GALLOWAY, OHIO.

Figures 1 to 5 represent a granary in use for the past fifteen years, with a few modifications and improvements. Figure 1 is a side view, with roof doors hinged at the lower side and opening downward. The capacity of the two side cribs is materially increased by these doors, and the building is also made more ornamental. The granary is twelve by twenty feet. The building rests upon nine locust posts, each set three feet in the ground, and extending two feet above the surface. The granary is made rat and mouse proof by surrounding the upper end of each post with tin; inverted tin pans are

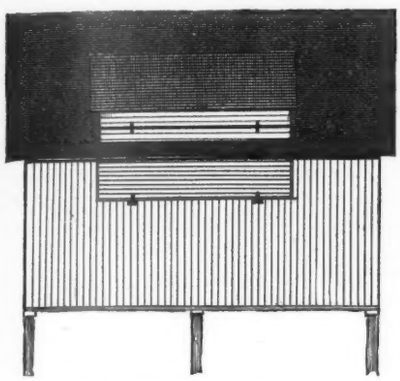


Fig. 1.—SIDE VIEW OF GRANARY.

excellent. The middle posts should be three or four inches higher than the outside ones, so that water or melted snow upon the floor may run out. The floor should be made of matched boards, that there may be no waste from leakage. Make the upper floor and granaries of the same material.

The two large granaries on the first floor, are partly filled from the space by the front door, and boarded up as filled, and then from openings in the floor of the passage-way up stairs. The ascent to the upper floor is by a ladder made of strips firmly nailed to the studding (*l*, fig. 3). The crib, which is closed by dropping in boards as it is filled, being narrowed off for this purpose, as shown by the oblique line *g*.

The granaries on the upper floor (fig. 4), are numbered from 1 to 9. The back wall inclines outward, and extends to the roof, as indicated by the studding shown in figure 5. The upright posts are cut so that the first two feet stand erect, while the upper portion inclines outward, making the passage two feet wide at the floor, and three feet near the top, and giving more room for the arms and shoulders. The upper part of the side cribs extend to

Fig. 2.—END OF GRANARY.

the roof of the granary. An end view of the granary and corn-house is shown in figure 2. A pulley attached to an arm under the angle of the roof, over the front door, aids in raising sacks to, and lowering them from, the upper floor, which is nine feet from the lower one. The estimated cost is as follows:—

9 locust posts, 5 ft long, @ 25c., $2.25; 9 tin pans $2.	$4.25
25 sills, 4x6 in. 20 ft long; 8, 12 ft. long	3.05
16 joists, 10 ft. long, 2x8 in. 215 ft. @ 2c.	4.30
4 " " " for upper floor; 2 plates, 20 ft. by 4x4, 165 ft.	3.30
22 rafters, 2x4 and 2x3, 10 ft. long, 260 ft., $4.30; 2 ties, 4x4, 12 ft. long, 32 ft., 65c.	4.85
200 studding, 2x3 and 3x4, $4; 750 ft. siding, $15	19.00
1,000 ft. matched boards for flooring, granaries, etc.	20.00
300 strips for roofing, 1x3, 11 ft. long	6.00
100 ft. boards for closing up granaries, cribs, etc.	2.00
7,000 shingles @ $4.50, $31.50; nails, hinges, and fastenings, $6.75	38.25
Labor, etc.	45.00
Total	$150.00

The Best Time to Cut Timber.

ANDREW S. FULLER.

If we were to take the opinion of men, practical and otherwise, as our guide in selecting a time for cutting timber we should never reach a conclusion in the matter, for there is not a month in the twelve, that has not been recommended as the very best time for felling trees in order that the wood should remain sound, firm, and durable. There is, no doubt, some foundation for this great variation in the opinion of even those who have had much practical experience in handling and working timber, and it is probably largely due to the fact that in many instances, and for many purposes, no difference is observable in the appearance or quality of timber whether cut in winter or summer.

Much depends upon the treatment timber receives after it is cut, whether placed in a position to season rapidly, or left in the woods, where seasoning will go on slowly; furthermore, climate—the prevalence of insects that attack felled trees—the kinds of timber, and various other conditions and circumstances have much influence on the durability and quality of wood of the same species of trees. It is certainly true that there is a great difference in the amount and condition of the moisture in trees at different seasons of the year, and while as a matter of convenience it will often be of more importance to the one cutting timber, than any

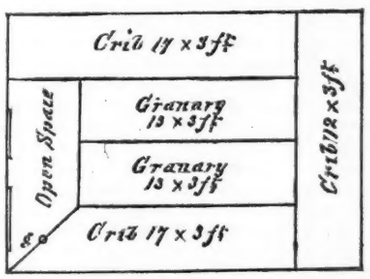


Fig. 3.—THE FIRST FLOOR.

slight variation in quality that may follow, still there is no doubt a choice in time for felling trees for all purposes. In late fall and winter, when trees are in a dormant state, the wood contains less liquids than in spring and summer, and this is without doubt an advantage, for there is not only less to be driven off in seasoning, but less to produce chemical changes which are often more or less injurious to both strength and durability.

From my own experience, and all the facts that I have been able to gather from lumbermen and dealers in timber, I have come to the conclusion that the winter is not only preferable, but the most convenient season for cutting timber, whether to be converted into sawed lumber or be used for posts, rails, railroad ties, or other purposes where toughness and durability are an object. But in case of small timber for posts and stakes from which the bark is to be stripped, then we may delay the cutting until the latter part of the winter, or until the sap commences to liquify, which will facilitate the removal of the bark. All stakes and posts which are to be set in the ground should have the bark removed on that portion in the ground.

If we bear in mind the fact, that it is only the outer portion of the tree—the sap wood, leaves, buds, and inner layers of the bark—which are alive and contain true sap, all other portions being dead, and only serve as a covering, or like the heart wood, help to sustain the tree in its position, we can readily see why it will make no material difference in the lasting properties of timber, whether it is cut in summer or winter, provided the green portion is soon deprived of its moisture, so that insects will not find a lodgment for their eggs, or decay be accelerated by its presence.

For such purposes as hoop poles, the bark must be retained, as it is generally considered essential, and in this case the young trees should be cut at a season when the bark will adhere the most firmly, that is late fall or early winter, although they may be cut in summer, because the hickories usually finish their growth quite early in the season, but the wood is likely to be more brittle if the poles are cut early or when they are in full leaf than later.

Coniferous trees from which it is desirable to strip the bark, should be cut during the growing season

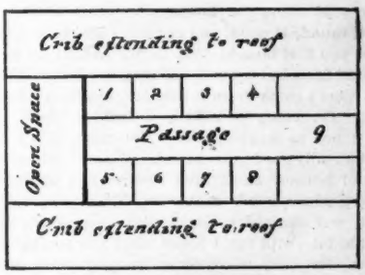


Fig. 4.—THE UPPER FLOOR.

in early summer, and if rapid seasoning is desired without removal of bark, the trees should be merely felled and allowed to remain thus with all their branches attached until the leaves fall off.

We may have other objects in view besides the value of the timber taken, such as a second growth to be produced from the stumps; when this is desired, the trees should be felled at a season most favorable to the roots. If the trees are cut late in the fall or winter, the roots and stumps will throw up sprouts far more readily than if the trees were cut in summer, when growing the most rapidly. In fact, late summer is the proper time to cut trees and shrubs if we desire to kill the roots. It would not be possible to name the exact time best for the purpose, because not only do seasons vary, but the right time in New York State would be too late for Virginia, and those further South, neither is the same time best in all years. I have seen acres of willows killed out completely by a single cutting of their tops, and the next season another lot was cut off during the same days of the same month, the roots of which were but little injured, and threw up sprouts in great abundance the following season. The weather at the time of cutting the willows, no doubt, had some influence in producing the difference in the results noted. In view of the increased attention given to willow-culture in this country, the proper time for cutting becomes of great importance, not only on account of its influence upon the quality of the rods to be used in basket making, but its effect upon the plantation. In England, where willows are grown to an astonishing extent, it has been found that to delay the cutting until spring, weakens the next crop.

In ancient times, and, in fact, in modern, many persons have believed the moon has some mysterious influence upon the growth of animals and plants inhabiting this earth; such insist that trees

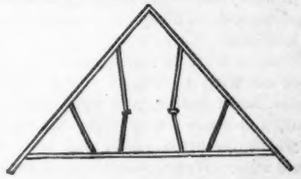


Fig. 5.—THE ROOF AND STUDDING.

should always be cut during certain phases of the "pale orb of night," but for some reason they fail to agree in this matter, some insisting that it is best to fell timber on the wane, others the new of the moon, etc., but such superstitions have long since become obsolete among men who know anything of natural history in any of its various branches.

Walks and Talks on the Farm.

New Series.—No. 2.

JOSEPH HARRIS, M. S.

"Did you see that article in the papers about eighty-cent wheat?" asked the Deacon, as he sat in the shade of a maple tree in the corner of his clover field. "It looks as though this country was going to see hard times. We can make nothing in growing wheat at present prices, and I do not see how the farmers at the West can either."—"Well, Deacon," I said, "you and I have lived long enough to know that dark forebodings of evil are usually exaggerated. I have seen good wheat sold for 'three York shillings' a bushel, and I believe you once sold some for twenty-five cents a bushel. Look round, Deacon, and see what has been done since you first bought this farm. Where we now sit, and for miles around, nothing but forest. The first time I came from Rochester, in several places along the road, so-called, I had to crawl on the fence to keep out of the mud. Now we have a really good gravel road. We have churches, school houses, substantial homes, fine orchards, good gardens, handsome lawns, with bright, intelligent, well-dressed children playing croquet, etc. Do not interrupt me, I know what you would say. These changes, whatever evils may come with them, are for the better. Forgetting the things that are behind, let us press forward. Courage, hope, self-denial and work, have hitherto sustained us, and depend upon it, the world will not come to an end till the end comes—even though we have 'eighty-cent wheat.' But we shall not have eighty-cent wheat—at any rate, not for long. It cannot be. Writers on this subject overlook one fact. They say a man has but one stomach, and that not a large one. It is soon filled, and no matter how cheap wheat may be, he can not eat more than he can. Improved implements, they say, and cheap transportation, and the clearing up of new lands, and the use of fertilizers on the old farms, have so increased the production of wheat, that there is an actual surplus which the world cannot use. There are not stomachs enough. How short-sighted this is. It is true that a man cannot eat more than a certain amount of bread. It is also true that he can do more work in a given time, than at any former period. People are better educated. They have the best of tools, implements, and machinery."

"Yes," said the Deacon, "and on the cheap, new lands of the West, they can produce wheat and send it here at a price that will ruin us."

"Wait a moment, Deacon," I replied, "you think I am wandering from the subject. Perhaps I am, perhaps not. What I am trying to get at is this: The world, as a world, is better educated, more skillful, and possesses wonderful appliances of all kinds, and ought to be, and is able to do a given amount of work in half the time, or quarter the time than it could fifty or twenty-five years ago, and consequently the world is twice as rich, or four times as rich as it was. Now, what will the world do with its surplus wealth? It cannot eat more wheat, you say, it can wear better clothes, and live in better houses, and have more comforts and luxuries, but it cannot eat more bread. And consequently the farmer, with his improved facilities, can very easily overstock the market, and leave himself no profit, and no adequate compensation for his skill and labor.

"There is no truth in this idea. An intelligent man does not want to live on bread alone. We think more, work harder, and want better, more nutritious, and more easily digested food. We want more beef, mutton, lamb, veal, pork, butter, cheese and milk. We are searching the world over for these products of the farm. There is no article of commerce, trade, or manufacture, that is more needed, or is in greater demand than good meat. And the more intelligent, skillful, industrious and wealthy the world becomes, the more meat will it want, I was going to say, need, and I believe it, but will not insist on this point. It is certain, however, that the demand for meat is steadily increasing, and the price advancing. It is a costly article. Ten pounds of gluten in bread, or legumin in peas and beans, or vegetable albumen in grass, will rarely give us over one pound of fibrine or albumen in beef or mutton. Animals are expensive machines which have to be kept running night and day, and it will require all our skill, experience and science in breeding and feeding, to produce the meat which the world will eat. A densely settled country like China, is necessarily filled with a vegetable-eating, and not a meat-eating people. If India, Russia, Australia, California, and our new lands in the Northwest, furnish the world with cheap bread, the world will have more money to expend in meat, and will be able and willing to pay good prices for it.

"A year ago, the Queen of England, owing to the scarcity and high price of mutton, thought she would do all she could to stop the killing of sheep before they had got their full growth, and ordered that no lamb be eaten in her household. Poor Queen, her intentions were good; but it is not the scarcity of sheep that is the trouble, but the scarcity and cost of food that is required to raise and fatten them. Then why talk about over-production? If grass, hay, corn, oats, barley and wheat are too cheap, sooner or later they will be converted into beef, and mutton, and pork, and the good Queen can have her roast leg of lamb, and mint sauce, without hypothecating the crown jewels.

"Our old friend, the Doctor, once remarked: 'if you want to make money, aim to produce the luxuries, rather than the necessities of life.' The fact is, the so-called luxuries soon become necessaries. It is certainly true of meat, eggs, milk and butter. And this reminds me, Deacon," I said, "that instead of cabbages, you had better grow cauliflowers, and still better, celery. Celery is now somewhat of a luxury. It will soon be considered as necessary as any other vegetable. And we shall soon have thousands of acres of our mucky, swamp lands, occupied with the crop, and it will be boxed up and sent all over the world.

"My own plan of growing it involves very little labor. It is planted on land so low and so wet, early in the season, that it cannot be plowed before the middle of June. It is light sand and muck, not naturally rich, at any rate, it produces only a moderate crop of grass or hay. We plow the land as soon as it will work properly, and harrow and roll. Then with a common corn-marker, we mark off rows four feet apart, and scatter along these rows a mixture of half superphosphate, and half nitrate of soda, say a good handful to each yard or two paces of the row. We do not sow it broadcast, but drop it along the row. We then take a horse-hoe or cultivator, remove all but three teeth, and set the cultivator as narrow as possible—say at fifteen to eighteen inches wide, and let the horse walk along the mark, and set the cultivator to run as deep as we can get it to work properly. We sometimes go twice in the row. The object is to make the soil as loose, and deep, and mellow as possible, and to mix the superphosphate and nitrate with the soil. Set out the plants in the rows eight or nine inches apart. You will be astonished at the good effect of the cultivator. It makes the soil so loose that the plants can be set out with the greatest ease. Of course, it would be just as well to cultivate the whole of the land, but this plan saves time, and the land between the rows will be thoroughly cultivated afterwards, in order to keep down the weeds.

"If the land is rich enough, it is not necessary to use the superphosphate and nitrate; but on my farm, I find great advantage from its use on celery, strawberries and asparagus."

"How late will it do to set out the celery plants?" asked the Deacon. "In this section they can be set out as late as the first week in August, and later as you go South."

"Are you going to get a binder?"—"No, not as long as I can hire two. There are enterprising young men in every neighborhood, or ought to be, who will keep one or two or three binders, and go round cutting wheat by the acre, just as they keep steam threshing machines, to thresh grain by the bushel. It is cheaper to hire than to buy.

"I hired two binders last year, and hope to do the same thing this year. All we had to do was to stick up the sheaves in stooks. Harvest time is now about our most leisure season. I thresh in the field where the wheat grew, with a steam thresher. Make the straw-stack in the field, and draw the straw home in the winter."

"But suppose it rains?"—"We stop. If we were drawing to the barn we should have to stop also. And we can draw faster to a machine in the field, than we can to the barn—at any rate we can unload faster, because the man on the load has merely to throw the sheaves on to the platform of the machine, whereas in the barn, or at a stack, towards the top, he has to lift them up above his head.

"Our mowing machines, reapers and binders, and steam threshers, are all that we can desire, with one exception; the straw carrier is not long enough. The manufacturer who will double the length of the longest carrier we now have, will receive the hearty thanks of every man who has ever had to take the straw away from one on the top of a stack. It is only a question of a few pounds more coal. In this section, straw is valuable as fodder for sheep and horses, and we all want good, high stacks, well topped off to shed the rain."

"My sheep all through the winter months get no hay; nothing but straw and malt-sprouts. After lambing, we give the ewes clover hay, and a few mangles, malt-sprouts or roots. I can winter twice as many sheep as I can summer, and such is the case on most of the farms in the wheat-growing sections. You will say that this means too much grain, and too little grass and clover.

"Meal and water is good for man and beast, easily made, and it is surprising that every farmer does not use it. Oat-meal is better, but for horses, cows and sheep, we use corn-meal. All we do is to stir in some meal in the water in the trough where the horses drink. If it gets sour, empty the trough and let the pigs have it. At first the horses do not like it, and it is better to give them a little in a pail, until they get used to it, when they will drink it as readily as pure water. When the horses come home tired and thirsty, at noon or night, nothing can be better for them. Or at any time when they have to work longer than usual, a drink of meal and water puts new life and vigor into them. By stirring up the meal from the bottom just before the horse drinks, or even while he is drinking, he will get more meal."

For some time the Deacon had not been listening. This is an old story to him.—"There he is, the villian," he exclaimed, and started for the barn. There has been a crow in the neighborhood, probably an escaped tame one, that carries off eggs and chickens. It makes the Deacon very mad. While I was talking, he caught sight of him, and ran for the gun. I have not heard the report, but sooner or later, I have no doubt the Deacon will get him.

Do Toads do Harm?

Strange as it may appear, all do not recognize a friend in the toad, for we are asked, "if they do any harm in the garden?" Under the writer's front stoop there is a shelter for several toads, and it is great amusement to watch them as they come out towards night for their evening meal. An insect is seen, and then he is not. One can not, at first sight, follow the rapid motion of the tongue of the toad, as it whips up the insect with the rapidity of a wink. The ancient belief that the toad's head contained a "jewel," must have had reference to that tongue of his, which is indeed "a jewel" in the way of an insect destroyer. Harris, the entomologist, states that he fed a toad with some black caterpillars, about three-fourths of an inch long. When he had fed a hundred he was tired, but the toad was not, but was ready for more. Toads are welcomed in our garden, but snakes, which sometimes come in from the woods near by, are not, but only because they prey upon toads. By all means encourage the toads, and discourage the snakes.

The Rival Beef Breeds.

F. D. COBURN, KANSAS.

Considerable changes have occurred within a quite recent period in the popular estimates and selling values of cattle of the various beef breeds, most common in the great grazing territory between the Allegheny and Rocky Mountains. Perhaps the most remarkable of these is the introduction, in comparatively large numbers, of the polled Aberdeen, Angus, and Galloway cattle from Scotland, and their wide dissemination at high prices, mainly to ranchmen on the Western prairies; prices which at the spring sales of the present year have been considerably cut down. The latter fact is partly accounted for by a determination of many cattle raisers to no longer pay two or three times as much for animals of breeders that here, under existing circumstances, are largely experimental, as for others of a breed or breeds of thoroughly demonstrated value under like conditions. This determination is also strengthened and the prices lessened by the pedigree of many of the newly-introduced animals being presented in such shape as to give small assurance of their being better than grades, while some of the individual animals have little more to recommend them than their being black, hornless, and imported. In spite of high prices heretofore, or apparent low prices now, there is no doubt that the best of these black cattle have great merit, upon which, like their competitors, they will be judged, bought and sold.

The Herefords were almost unknown in America a decade ago, when the bare suggestion of their ever being formidable competitors in the beef classes was regarded by ninety-nine persons in a hundred as most ridiculous. They have shown themselves the peers of any, in the stall or on the butcher's block. In price they are held more firmly by their owners than cattle of any other breeds. They occupy this position not from merits assumed, but from desirable qualities thoroughly demonstrated under conditions adverse as well as favorable, and their popularity founded on the basis of merit seems permanently assured.

Shorthorns, the best known and most fully tested of all improved cattle in America, have, as a breed, for years suffered harm from the distorted views entertained by many persons raising them, who placed pedigree and color above individual excellence, also from the selling to confiding purchasers as representatives of the breed, thousands of the more unworthy specimens to perpetuate their inferiority, that should have been sent to the shambles. There are weeds in every breed, and if used to propagate from, the standard is sure to be lowered sooner or later. Notwithstanding the mistakes of which they have been the victims, the Shorthorn interest is probably now in a more healthy condition than at any time in the past twenty years. Much of this favorable reaction is due to the rivalry and rapid advancement of other breeds towards occupying the fields before supposed to be all its own. The tendency in rearing each of these breeds is constantly toward a higher beef standard, to the economical and profitable attainment of which other considerations, such as color, pedigree, and remote crosses will be rated but secondary. Let us agree upon essentials.

The Cattle for the South.

Some recent experience with Jersey and Devon cattle, seems to indicate that the latter are best for the tide-water sections of the South. Two years ago a thoroughbred Jersey bull was purchased, and put to service on several of the best obtainable native or graded cows. Six fine calves was the result; but these did not make much headway in growth. Before another season, the bull sickened and died, despite all that could be done for him, though he had a good pasture, and was not allowed to run out upon the commons. Since then, four of the calves have also died, from no apparent cause, unless it be on account of the peculiar character of our summer season. The two remaining calves, though seemingly healthy, are small and delicate. They may survive, but will never attain the sprightliness and usual vigor of the Jerseys, as I have seen them in mountainous districts. The conclusion is that the Jersey is too delicate for this section. It may do in the more elevated regions, where the summers are not so moist and sweltering as they are nearer the ocean. A first class native, or a grade Shorthorn, would be a safer investment.

This preference for the Shorthorn is based on actual, and somewhat extended tests. Several years ago, when I started farming, I found the grade Shorthorn a very good milker, and excellent for beef and labor. The oxen are strong, heavy, and enduring, and the breed, having had long trial here, appears to be entirely hardy, and fully acclimated. On good pasturage, the Devon develops into a superior animal for beef and for labor. It stands as much neglect, even ill-usage, without material deterioration, as any other breed of cattle. And as there are already here many good grade Devons, any one who may desire to establish a nearly pure blood herd, would only have to procure a full blooded male, and purchase the native grades, which would cost him much less. The partiality that many feel for the Jersey, might lead some in this region (Surrey Co., Va.) to invest more in this breed than would be justifiable under the circumstances. B. W. J.

Sloping Shoulders in Draft Horses.

The student of horse anatomy from the usual text-books and horse-books, will naturally conclude that an upright arm or humerus (the bone designated as *b*, in fig. 1), and an oblique shoulder are incompatible. That this is not so, is clearly shown in the accompanying diagrams. In figure 1 we have an upright humerus, in figure 2 a very oblique one, and yet the slope of the shoulder blades (*a*, *a*, in each diagram), is exactly the same. It has long been held that while a sloping shoulder is very important for a hunter or a trotter, an upright shoulder does very well for a draft-horse. The sloping shoulder is supposed also to promote high action, which is desirable in carriage horses. From recent observations of Mr. James Howard, communicated

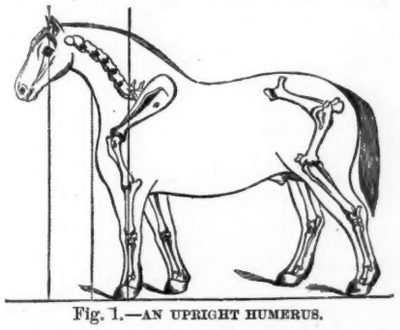


Fig. 1.—AN UPRIGHT HUMERUS.

in "Notes on Cart-horses," to the Royal Agricultural Society, it would seem that we have all been poor observers, and pupils of very poor masters, not to have seen how much more the power, style, action and usefulness of any horse, and especially of a draft-horse, depended upon the position of the leg, rather than upon the slope of the shoulder-blade. In figure 1 the weight of the horse is sustained in front, upon an almost perpendicular column of bone, the humerus, at the shoulder joint, being but very little out of the perpendicular, just enough to give the needed elasticity to the limb. The leg is well forward, which position of course causes the weight of the body to be much more evenly distributed between the fore and hind legs, giving greater stability, and greater propelling power. While, were high action desirable in a draft-horse, and they usually possess it, this position of the humerus is far more favorable to it than the position shown in figure 2. In that we see the fore legs inordinately loaded with the weight of the body, and the bones so connected, especially at the shoulder and elbow joints, that a long stretch of the leg as in fast walking, or high knee action, can not be taken with any ease, if indeed by any possibility; the whole cause being the obliqueness of the humerus or true arm. We have no doubt as to the great desirability of looking well to this point in draft-horses, and wonder that it has never been forcibly presented to us before. So far as we can see, it is of nearly equal advantage to other horses. Their legs are, however, neither adapted to,

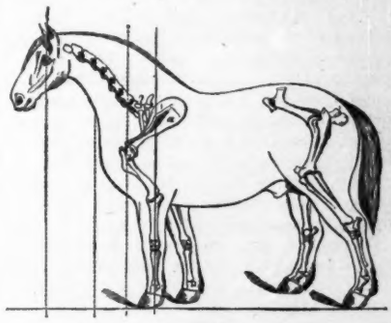


Fig. 2.—AN OBLIQUE HUMERUS.

nor called upon to sustain equal proportionate weight, except, perhaps, in the case of hunters, whose legs in leaping must sustain enormous pressure. It is, moreover, the experience of Mr. Howard, that for both draft and saddle horses, the upright humerus is of greater importance than the sloping shoulder blade. It is nevertheless true, that in draft-horses with very sloping shoulders, high withers are most important. Otherwise the collar will not be held well in position, but will bear too heavily against the chest, shoulder points, and perhaps against the lower part of the neck, so as to obstruct the breathing and inconvenience the horse.

Valuable Points in Horse Breeding.

Mr. James Howard, a famous English breeder of horses, has arrived at some important conclusions in the art of breeding. He believes that the external structure, configuration and outward characteristics, including peculiarities of locomotion, are mainly derived from the sire, while the structure of the various internal organs, the temper, habits, and constitution, come from the dam. The purer the blood of the parent, the more certainty there is of its qualities being transmitted to the offspring. This is particularly true, if the greater purity of race or breed is on the side of the sire. A pure-blooded male that has descended from a stock of uniform color, fixes that same color upon his colt. A sire may influence progeny subsequent to that of which he is a parent; that is, his influence is stamped upon the dam. The transmission of diseases of the vital organs, is more certain from the female, while disorders of the external parts, joints, etc., most surely come from the side of the sire. We know of many exceptions —if they are exceptions—to the above points, and give them more as food for thought for horse-breeders and others, than as rules of action.

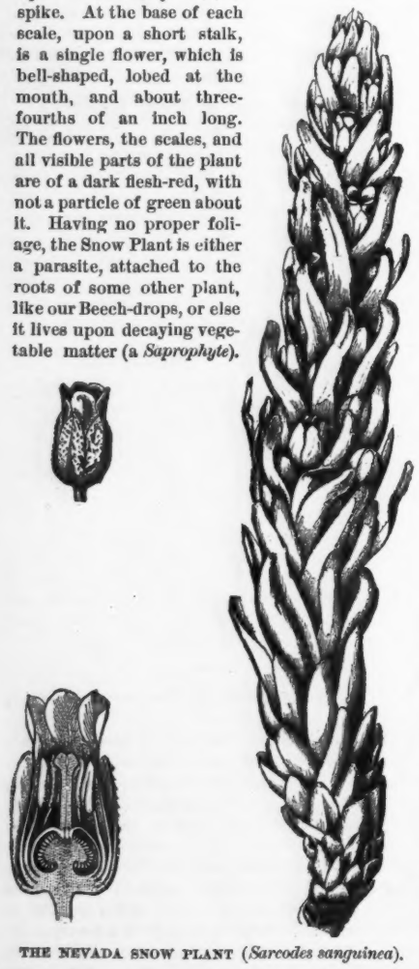
Hens Picking Feathers.

The pernicious habit of picking feathers occurs generally among hens and chickens that are confined to small yards, or henneries, without any yard. Villagers are often obliged to raise chickens, if they have them, in very narrow quarters. It is much easier to supply grain and vegetable food, than to furnish the animal food which is essential to the production of eggs. If they cannot get it otherwise, they will pick at the feathers of their neighbors. The pin feathers are a very delicious morsel, and chickens are most likely to be plucked at the moulting time. The old hens will draw blood, and when this is tasted the flesh will follow, and we have occasionally known half-grown chickens to be killed and eaten by the hens with which they were confined. The remedy is animal food in some form, and this should be given without delay, as soon as there is any indication of the

vicious habit. If the fowls are turned out where they can get insects, this will meet the want. Skimmed or sour milk, healthy beef-liver, butcher's offal, fish offal, and chandler's greaves, are cheap forms of animal food, generally within reach.

The Snow Plant of Sierra Nevada.

When the overland route to California was by stage coaches, travellers often gave glowing accounts of the natural wonders to be seen, especially in the Sierras. Among these was the Snow Plant, which appeared as if by magic, suddenly thrusting its blood-red spike out of a snow bank. Aside from a little enthusiasm, these travellers' descriptions were not far wrong. Mrs. B. E. Hunter, of Reno, Nevada, has given us an opportunity of examining the plant in the living state, by sending one "just beginning to grow," the development of which we were able to observe. Botanical works state that the plant flowers as "soon as the snow melts away." Mrs. Hunter in suggestions as to the treatment of the specimen after it should arrive, says: "Place it in water as deep or deeper than it was in the ground....If you put ice in the water it will make it thrive better, as it grows up out of a snow bank, and needs to be kept cold." This confirms the travellers' description as to its occurrence in the snow. The engraving gives the whole plant reduced in size; the specimen sent, when full-grown, was a foot in hight. It will be observed there are no real leaves, but instead are numerous fleshy scales, which are broad upon the portion of stem below ground, and long and narrow upon the fleshy flower-spike. At the base of each scale, upon a short stalk, is a single flower, which is bell-shaped, lobed at the mouth, and about three-fourths of an inch long. The flowers, the scales, and all visible parts of the plant are of a dark flesh-red, with not a particle of green about it. Having no proper foliage, the Snow Plant is either a parasite, attached to the roots of some other plant, like our Beech-drops, or else it lives upon decaying vegetable matter (a *Saprophyte*).



THE NEVADA SNOW PLANT (*Sarcodes sanguinea*).

The fact that it will flourish at the low temperature of melting ice is striking, but we have an humble plant, our little Chickweed, that does the same. The Snow Plant is found in the Sierra Nevada, at the altitude of four thousand to nine thousand feet, in the forests of Spruce, and the groves of *Sequoia*—the "Big-tree" of California. It was first discovered by Fremont, and described by Dr. Torrey in the "Smithsonian Contributions," who gave it the name *Sarcodes* (resembling flesh), *sanguinea* (bloody). The engraving gives at the left a separate entire flower of real size, and below one cut through longitudinally, somewhat magnified.

Notes From the Pines.

A short time ago, a young man from California called on me, who is known as a horticultural writer. He wished to tell me how much help and encouragement he found in the Notes in his early efforts in horticulture on the Pacific side. I shall continue them from time to time, in the hope that there are other young men who may find them helpful and encouraging. It is, after all, the little matters, those that writers upon horticulture do not regard as of sufficient importance to give a place in their books, the minor matters of practice, that are suggested in one's daily work, that are really of service to the novice.

PLANTING THICKLY AT FIRST.

I was looking over, recently, a work on gardening, which advised, in laying out a new place or in remodelling an old one, to plant shrubs and trees thickly for immediate effect, and as they become too much crowded by increasing in size, to thin them out. Is this good advice? Perhaps it is for some. But when I remodelled this place, I had the same idea and planted thickly, with the intention of thinning, and that good intention has not been put into practice. When a tree or shrub has grown up under one's eyes for ten years or more, if he can put the axe to the root, he has more courage than I. I admit that it would be better for those remaining, to remove it, but then this one that has grown into my affections all these years, will be there no more. I have had a few trees removed while I was away from home, and the vacant places daily remind me of the loss. From my own experience I should not advise thick planting, for when the time for the thinning arrives, it will not be done. A tree-planter should be able to imagine the appearance of his work when the trees have attained their full size. Mr. Elias A. Long illustrates the danger of too close planting by means of a diagram which I borrow. The young trees are shown at the time of planting, and do not appear to be at all crowded. The curved dotted lines show the sizes of the trees at the end of a few years.

THE JAPANESE SNOWBALL.

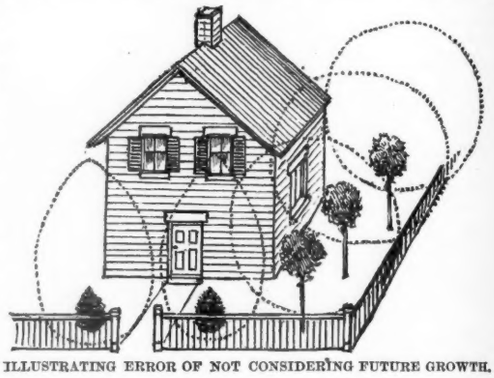
In my rather large collection of shrubs there is none finer, or that has afforded more real pleasure than the Japanese Snowball. Every one knows the old-fashioned Snowball, to be found in all old gardens. This Japanese species (*Viburnum plicatum*), is vastly superior in every respect. My specimen is now about eight feet high, and when loaded with its snow-white clusters in early June, was a grand sight. The habit of the bush, its rich, very dark-green leaves and snow-white clusters all place it in the very front rank of ornamental shrubs. Being somewhat difficult to propagate, it is held at a rather high price in the nurseries, but it is worth all it costs to lovers of fine shrubs.

COAL ASHES FOR WALKS.

I at one time regretted that we could only get good gravel here by bringing it a long distance by rail and at a great expense. Since I have had more experience in the use of coal-ashes for walks, I prefer them to gravel at the same price. When laid down, some soil should be sprinkled upon the surface of the ashes, and they will soon pack and form a path with a permanent, smooth surface, that is delightful to walk upon. We placed all our own ashes upon the side-walk of the road leading to the railroad station and post-office. A factory a mile or more distant was glad to have us cart away all the ashes we would take, and as a result we have a walk that is dry, firm, and at the same time elastic, making a grand neighborhood improvement.

THE KENTUCKY COFFEE TREE.

Looking out from my window upon a fine specimen of the Kentucky Coffee Tree, I thought what a pity it is, that with this and so many other fine native trees, to give variety, people should go on planting just a few kinds, each one selecting the same, so that one place is just like another, so far as the trees can make it so. The Neighborhood Improvement Societies have done much good work. If they could contrive to teach people the merits of our neglected native trees, they would add to their usefulness. The tree in question may be described as a glorified Black Walnut. The leaves are two or three feet long, are much more divided than in the Walnut (twice pinnate, as the botanists say); the foliage is much more graceful,



ILLUSTRATING ERROR OF NOT CONSIDERING FUTURE GROWTH.

and as it plays in the breeze has a lightness that is most pleasing. The flowers are not conspicuous, and the staminate and pistillate are on different trees. The fruit is a large curved pod, which contains several large flattened seeds. The early settlers at the West used these seeds as a substitute for coffee, which gave the tree its common name. When the abundant foliage has fallen, the tree has a peculiar appearance on account of the large size of its naked branches, and the absence of small spray. From this characteristic its botanical name is derived, *Gymnocladus*, meaning naked branch. Being found from Canada, southward, the tree is generally hardy. The reddish wood is fine-grained and durable, which with its rapid growth make the tree valuable in timber plantations. It is propagated from the seed, and grows readily from cuttings of the roots. The *American Agriculturist* has done much to make our native trees better known, and I suppose that the only way is to keep hammering away at them.

THE PINES.

Save the Potatoes.

JOSEPH HARRIS.

The method of applying Paris Green or London Purple to potato vines infested with the Colorado beetles or "potato bugs," is of comparatively little consequence. The important point is to apply it early enough, and often enough, and late enough. Half-way measures do not answer. It is folly to talk about hand-picking. It is fool-hardy to sit still and hope that the bugs will leave of their own accord, or do little damage.

If left alone, or not killed entirely, they will almost certainly ruin your crop. And mark you, the injury done, whether it is to the extent of one-eighth, one-quarter, or one-half the crop, is so much deducted from your profits. The interest on the land, the cost of manures, the labor of plowing, harrowing, rolling, marking, planting seed, cultivating, hoeing, and to a great extent digging the crop, is the same for a good yield as a bad one.

Potatoes will probably be potatoes next spring. It is seldom they are so cheap as they were this spring two years in succession. But whether they are cheap or dear, provided we grow them at all, it is very unwise to let the bugs eat up the vines and our profits at the same time, all for the want of a little energy, and the prompt and repeated application of a little Paris Green or London Purple.

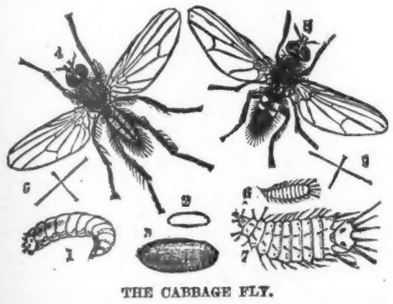
Two years ago, we knew a man who had two fields

of potatoes. One he "greened" in good season, and the other he thought would get along without it. About three weeks afterwards he found that the potatoes where no Paris Green was used were covered with the bugs. He then applied the poison, and at the same time repeated the application on the first field. On the first field he had two hundred bushels per acre, on the other not fifty bushels, and part were so poor that he did not dig them at all. He lost not less than five hundred dollars worth of potatoes for the want of three or four dollars worth of labor and Paris Green.

The Cabbage Fly and its Relatives.

In England, one of the greatest obstacles the cabbage-grower has to contend with is the maggot of the Cabbage Fly, which sometimes destroys whole fields of cabbages. As the insect has already appeared in this country, and has done some damage, our readers are interested in knowing something about it in advance, that they may be prepared to meet it, when it makes its appearance in their crops. The insect is own brother to the destructive Onion Fly, the Beet Fly, and the Seed-corn Maggot, all of which belong to the genus *Anthomyia*, the Cabbage Fly being *A. brassicæ*. The maggots, 1 in the engraving, eat numerous holes in the stems and roots of the cabbages, on account of which, especially in wet weather, decay sets in, and the plant perishes. The maggot, when full grown, is about a third of an inch long, is whitish, leg-less, tapering to the head, and blunt at the tail, which has short teeth-like points at the margin. When its growth is complete, the maggot enters the earth, and changes to a reddish-brown pupa, with a few black spots at the head, and short teeth at the tail, seen in the engraving at 2 and 3, natural size and magnified. In two or three weeks the flies come out, and lay eggs for another crop, and successive generations are produced until November, after which time the pupæ remain in the ground unhatched until spring. Cabbages, when attacked by the maggot, show by a drooping of their leaves, and by a change in color, that something is wrong. The application of clear lime-water, made as soon as the presence of the maggot is detected, has been found useful. As the maggot enters the ground close to the plant, and goes down but a short distance, it is recommended, to draw the earth from around the root, with the pupæ in it, and destroy them by heat or deep burial. But such measures as these can only be practicable in the garden. On a large scale, relief can only be had by a change of crop, occupying the land with beans, grain, or some other crop, upon which the parent fly will not deposit her eggs.

Another species is known as the Root-eating Fly, *A. radicum*, the maggots of which are found in cabbages and turnips in England; these very closely resemble the maggots of the preceding, but are of a more ochre-like color. The perfect fly is shown at 4, magnified, the lines giving the real size; its colors are black and gray. This insect has not yet been noticed in this country, but curiously enough a maggot, which is very destructive to the eggs of the Locust, that plague of the far



THE CABBAGE FLY.

West, was found to be the larva of a fly, so closely resembling this European Root-eating Fly, that Prof. Riley has described it as a variety of this species.

Though our potato crop has already a sufficient number of enemies, there is a possibility that one more may be introduced. In England the maggot of another species of *Anthomyia*, *A. tuberosa*, feeds upon the potato. The maggot is given at 6 and 7, of its real size and magnified, and the fly at 8 and 9.

Floral Chenille—Spraguea.

Among the interesting plants made known by the early explorers of the Sierra Nevada, is a mem-

THE FLORAL CHENILLE (*Spraguea umbellata*).

ber of the Purslane or Portulaca family. This proved to be very interesting to botanists, and Dr. Torrey, in view of the great services Mr. Isaac Sprague had rendered to botany, by his wonderfully accurate drawings, named the plant *Spraguea*. After some years the seeds of this plant were sent to Europe, and it went into cultivation. The flowers themselves are very small, and have no beauty, but their large and persistent sepals and bracts, crowded together, make a curious inflorescence. These flower clusters, of a peculiar warm gray color, were at once adopted by the French florists as a most useful material with which to finish off the lower portion of a bouquet. From the resemblance of the flower spikes to that kind of trimming, called Chenille, the plant was named by the French florists "Chenille Florale," and became for a time quite the flower fashion in Paris. The plant is a biennial. Its flower stalks, produced the second year, are six inches or more high, surmounted by the peculiar, recurved, densely flowered clusters. The seeds are offered by our leading seedsmen. The engraving represents the plant in bloom, showing its peculiar habit. Our only trial with the plant was in an unusually dry season, and the next year it failed to flower satisfactorily.

Lady-birds and their Larvæ.

It is fortunate that the Lady-birds are generally so prettily colored, and so handsomely spotted. Otherwise they might fare badly at the hands of those who call every insect a bug, and kill it without stopping to ask what it does for a living. Even those who spare them do not generally know that the Lady-birds have a claim to exemption, beyond their good looks; it is a case where "handsome does" goes with "handsome is." It should be generally known, and children ought to be taught that these are among our most useful insects, and rid us of vast numbers of other insects that do us damage. Every one knows the Lady-birds in their perfect state, but they do the most of their beneficial labor, so to speak, in their working clothes, or in the larval state. In this, or the caterpillar condition, they are not very attractive, though highly useful, and it is important that every one should be able to know them in every form they assume.

In the engraving figure 3 represents the general appearance of the larvæ. They are usually lead-colored, and often marked with yellow, red, and other colors. They move about in such a busy manner that one would hardly suppose them to be caterpillars. Like other caterpillars they are great feeders, but unlike most, instead of feeding directly upon our plants, they do it at second hand and eat the insects that eat our plants, and render great service in devouring myriads of plant lice and other small insects. They actually attack the disgusting fat larva of the Potato-bug of Colorado, which few other creatures, whether bird or beast, can stomach. After an active useful life of about three weeks, they take a well earned rest; hanging themselves up by the tail, they become shining black chrysalids as shown in figure 1. In this condition it appears quite unlike the lively larva it was before, or the bright-colored spotted beetle that it will be, and it is especially important that it should be recognized in this state, as it is exposed to great danger from ignorance of its real character. We knew of a person who ought to have known better who went out to pick bugs from the potatoes in his garden. He came back with a nice collection

LADY-BIRDS, LARVA, CHRYSALIDS AND BEETLES.

of Lady-birds in the chrysalis state, not knowing his friends from his enemies. This is one of the cases in which even a slight knowledge of insects has a cash value. These engravings will enable even the children to know the useful Lady-birds under all their disguises and treat them as friends.

Variation in the Leaves of Trees.

The number of our ornamental trees is largely increased by the fact that individual trees sometimes vary from the usual or normal form of the species. This variation occurs in the branches, which may be pendulous, and produce "weeping trees," or erect and fan-like. The leaves vary greatly, both in their form and colors, and the flowers and fruit may strikingly depart from those proper to the species. The Weeping Beech, the Fern-leaved and Purple Beeches, are three striking and valuable ornamental trees, produced by as many different kinds of variation, affecting the branches, and the form and color of the leaves. Some variations are produced from the seed, the young seedling trees showing their peculiarities from the start. Variations of this kind are to some extent continued by seed. When the seeds of the Purple Beech are sown, the nurserymen expect that a large percentage of the seedlings will have purple foliage. Variations are produced in another manner. A branch appears upon a tree of the normal kind, having a different habit of growth, or bearing leaves, flowers, etc., quite unlike those upon the rest of the tree. The term "sport" was long ago applied to variations occurring in this manner; Darwin called them "bud variations." Such forms are propagated by cuttings, layering, grafting, etc. They often differ from the usual form of the tree in the readiness with which they may be propagated, and sometimes as to their hardiness. The variations in the form of the leaves often give to the tree a very different expression from that peculiar to the species, and the foliage, instead of being dense and massive, is light and feathery. Deciduous trees with simple leaves, may be divided into two groups; one with feather-veined, and the other with radiate-veined leaves. In the first, like the beech, the apple and many others, a strong mid-rib runs lengthwise of the leaf, from its base to its tip, and smaller ribs or veins run from the mid-rib to the margin of the leaf, somewhat like the plume upon a feather. In the other group, the radiate-veined, three, five or more equally strong ribs, start from the base of the leaf, and diverge towards the circumference, as in the maples, the buttonwood tree, etc. Such leaves are also called palmately-veined. We may look upon a leaf as a frame-work of ribs or veins; these are woody and firm, and give strength to the leaf. The spaces between these are filled with a soft, green, pulpy material, in which the work of the leaf is carried on. In leaves of the normal form, there is a great difference as to the completeness with which the margin is filled out. Sometimes there is no break in the margin, not even the slight notches so common; such leaves are called entire. The margins of other leaves are variously indented, and this varies from fine notches, to depressions half way or more to the mid-rib, producing that great variety in outline, so noticeable in leaves. These forms of leaves are characteristic of species. Leaves ordinarily entire, or with slight indentations on the margin, may vary by having unusually deep divisions; such trees are popularly known as cut-leaved. The feather-veined leaves have the divisions run from the margin towards the mid-rib, and when these are deep, the trees are often called "fern-leaved." The unusual indentation or cutting of the margin of radiately-veined leaves, produces a very different set of forms. The native Silver Maple, or White Maple (*Acer dasycarpum*), is one of our most valued trees for shade or for fuel. Among the many thousands of seedlings that have been raised, a number have shown marked variations in their leaves, and several have been multiplied in the nurseries. The engravings, figures 1, 2, 3 and 4, of the leaves of some of the varieties of Silver Maple, will show how widely they differ from the usual form, which is shown in figure 1.

Fig. 1.—ORDINARY LEAF OF SILVER MAPLE.

Fig. 2.—CRISPED-LEAVED MAPLE.

"Summer Pruning" The Grape Vine.

Each shoot, upon a bearing vine, will have near its base, two or three clusters of grapes. If left to itself, the growth will continue beyond these clusters, and the shoot be prolonged for several feet, ceasing only late in the season. Each shoot will have a few bunches, and beyond them a long stretch of vine to be removed at the autumn pruning. In the earlier days of grape culture, and before the vine was as well understood as it is at present, it was advised to "Summer-prune." After the vine had expended its energies in producing this long shoot, it was advised to cut it away in summer, just above the fruit, thus causing a severe check to the vine, and resulting in the ruin of many of the best vineyards in Ohio and elsewhere. A little leaf-folding caterpillar taught a lesson, which Husmann, and other Missouri vineyardists, were wise enough to heed. This caterpiller was found in the unfolding leaves of the shoot. It cut off the tender stem a short distance above the uppermost cluster of flower-buds. The appearance of the caterpillar caused alarm, but when it was found that the fruit upon the shoots which this caterpiller had pruned, was larger and finer than upon the shoots that had escaped, the hint was at once taken, and shortening the shoots by early pinching, was a great step forward in grape culture. If through neglect, or want of knowledge, the shoots have grown far beyond the fruit clusters, do not cut them back, but stop their growth. Pinch out the growing point of every such shoot, and stop its extending in length. The proper treatment of the laterals is, to pinch back each shoot to its lower leaf. Do not remove them altogether, but always leave the lowest leaf.

Fig. 3.—CUT-LEAVED SILVER MAPLE.

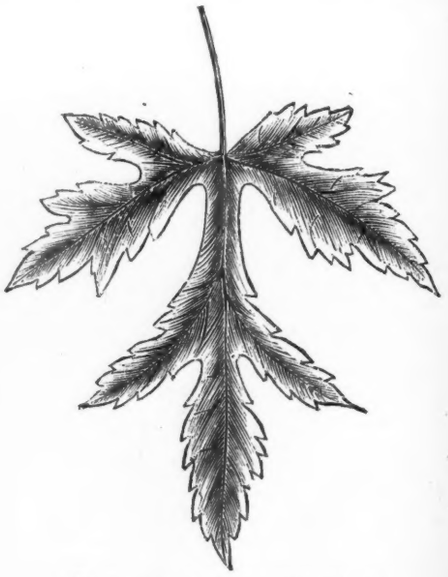


Fig. 4.—THREE-PARTED SILVER MAPLE.

Should Farmers Grow Celery?

Formerly the cultivation of celery was attended with so much useless labor in the way of making trenches, and then filling them again, that it was supposed to be a crop only suited to the skilled gardener. The method of treating celery is now so greatly simplified, that it requires but little more skill to cultivate it, than must be bestowed upon a crop of cabbages. There is no reason why the table of the farmer should not be provided with all the luxuries that the garden can supply, and if he has not acquired a taste for celery, he will find ready purchasers for his crop. Farmers near cities and villages, are gradually turning their farms into farm-gardens, and raising crops that bring better returns than corn and wheat. Farmers who supply near markets, will do well to try a crop of celery. Mr. Joseph Harris, in his "Walks and Talks" for the present number, gives about all the directions that a beginner needs, save that we would add one point. In setting out the celery plants, be careful that they are placed no deeper in the ground than they were in the seed-bed. No portion of "the heart," or base of the leaf-stalks, should be covered with soil, as it will interfere with the future growth. Another point is, to have the soil packed firmly against the roots. If the one who plants gives a firm downward pressure with both hands, as a finishing touch, this will accomplish the proper setting. Gardeners usually go over the row, and by pressing upon the soil close to the plant with the feet, give the needed firming. If plants cannot be had nearer home, they can be obtained of the seedsmen in the large cities. Try celery, if only on a small scale, as preparatory to planting more largely another year. The final treatment, etc., will be given at the proper season.

The Fruit Harvest.

Notwithstanding considerable damage by frost in some localities, the crops in places not visited by this disaster, promise to be so large as to make this, on the whole, a season of abundance. Many new orchards, especially of peaches, will yield their first crops this year, and this increased area may make up for local losses. The means taken to improve the quality of the fruit, and to place it on the market in the most attractive form, will show their value more strikingly in a year of plenty than in one of scarcity. As there is always room "higher up," so there is always a sale for fruit of the very first-class. Among the means for improving fruit, we have often advocated thinning. While it is too late to practice this to obtain the best results, it will still pay to go over choice late pears, and possibly select late peaches, and instead of assorting the fruit at picking time, do it on the tree, thus giving that which remains one or two months or more of time in which to benefit by the nourishment that would have gone to the inferior fruit.

After the peach-grower has brought his trees into bearing he is often confronted by an unforeseen difficulty, that of picking his crop. His returns will depend largely upon the manner in which the fruit is picked, and in localities where peach culture is but recently introduced, skilled pickers are not to be had. Pickers cannot be brought from the peach districts, for they are in demand at home. All that the owner of the orchard can do is to engage the most intelligent hands possible, and instruct them to distinguish between the mature and over-ripe fruit. A peach that can be indented by a moderate pressure between the thumb and two fingers, is too ripe to go to market. The peach crate adopted by the Maryland and Delaware growers is made as follows: Two end pieces seven and a half inches wide, fourteen long, and three-quarters thick. The top and bottom are of three-eighths stuff, six and a half inches wide, and twenty-three and a half long. The sides each require four slats, twenty-three and a half inches long and two and a half wide. These are also three-eighths-inch thick.

Early pears and apples often reach market in a poor and mealy condition. This is due to delaying the picking too long. Early pears as a rule should be gathered one or two weeks before they would ripen upon the tree. The ready parting of the stem of the fruit from the branch should be watched for, and as soon as this takes place the picking should not be delayed. Early apples of first-class are never abundant in the market, though early trash may be plenty. The change of color in the skin or in the seeds, as well as the ready parting from the tree, are guides to the time for picking. It will pay with these, as with later kinds, to carefully assort into two qualities and send to market in attractive form. Bushel crates are better than barrels for choice fruit. In gathering both these and early pears, take care that the stems are not broken, as the beauty of the finest fruit is seriously impaired by a lost or mutilated stem.

Grapes of several kinds are colored before they are fit to be eaten, and many are tempted to send

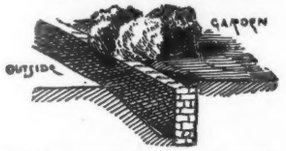


Fig. 2.—BOUNDARY OUT OF SIGHT.

them to market too early. No fruit is so improved by being thoroughly ripened before gathering as the grape, and those who would establish a reputation for quality will heed this. When grapes are completely ripe the stem loses its stiffness, and the cluster hangs directly down from the vine; the stem also usually becomes colored, or loses its green color. Within a few years the manner of sending grapes to market has greatly changed. Not long ago the flat five and ten-pound wooden box was the universal package. At present vast quantities are marketed in baskets, holding ten and twenty pounds. These are flat, oblong, splint baskets with a handle. The grapes are laid in carefully and covered with cotton cloth, either sewed on or provided with a string run in around the edge in such a manner as to be drawn tight. Another package for grapes that are not to be kept late is a paste-board box with a wooden bottom. Grapes to be packed in boxes should be exposed to the air in shallow trays in a cool and airy fruit room; the object of this is to "cure" or toughen the skin of the fruit, and this process may require a week or more.

Plums, except the common kinds, are very rare in the markets. Those who undertake the labor of saving their fruit from the curculio, find a ready sale for it at high prices. Choice varieties are packed in fancy boxes and small baskets. The great beauty of this fruit depends upon its bloom, and extreme care is required in picking and packing to prevent the removal of this. The common varieties of plums are marketed in boxes and baskets.

The Management of Irregular Grounds.

Those about to lay out new places, or to remodel old ones, should, in making their plans, take into

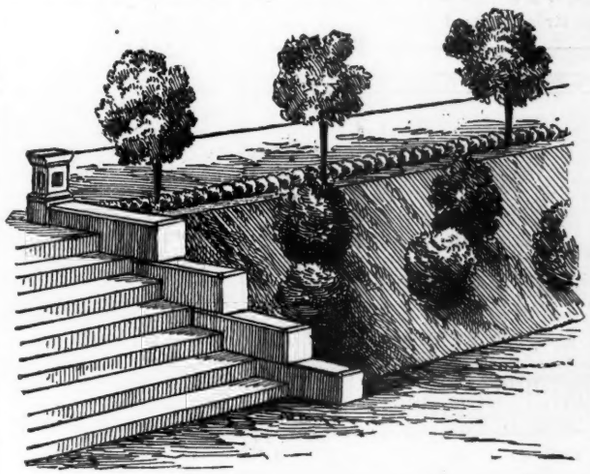


Fig. 1.—TERRACE ADORNED WITH TREES.

account the natural advantages of the ground, so far as possible. There is no better time than the present, while the trees are still in full leaf, to judge of the natural features of a place, and what changes may be necessary in improving it. A garden upon a hill-side offers opportunities for embellishment, not presented by a level surface. Such a garden may be laid out as a succession of terraces and slopes, each of which presents opportunities for ornamentation. Being highly artificial, they allow the use of steps, from a higher to a lower level. Mr. Elias A. Long, in his "Ornamental Gardening for Americans," soon to be published, gives the following method of treating terraces and slopes, which removes much of their ordinary formal appearance. In figure 1 the regular outlines of the steps are relieved by the trees at the top of the slope, and there may be introduced a line of showy plants, to be seen from below. The slope, instead of being, as usual, an unbroken surface of grass, may have its ordinary blankness relieved by planting here and there some of the many ornamental shrubs, suitable for the purpose.

In laying out grounds, it should be the object of the landscape architect, to make the area he has in hand appear as large as possible. One method of doing this is, to open vistas, through which a glimpse may be had of whatever may be beyond, whether of mountain, the sea, or rural life. Another method of making a place appear larger is, by removing all visible boundaries. It frequently happens that the boundary wall may be placed quite out of sight, as in figure 2. Where neighbors agree to dispense with boundary fences, each can enjoy the view of the other's place. If desired to mark the boundary between the two places, it may be done by means of stones, or low posts of durable wood, set in the ground on the line. On places, where it is desirable to keep the home grounds safe from intrusion by animals at pasture, a sunken fence, like that shown in figure 3, may be often employed. We have in mind a place, in which a ravine was thus converted into a barrier, separating the pasture lands from the grounds about the house in an invisible, but most effective manner.

The Pecan Nut.—Its Cultivation.

Mr. J. C. Wilson, Chattanooga, Tenn., writes us an interesting letter, advocating the culture of the Pecan tree. He regards this as the most valuable of the nut-bearing trees, those in the woods yielding many bushels each of nuts, which always meet with a ready sale at "fancy prices." As the Pecan will grow on almost any soil, even on rocky hills, Mr. Wilson thinks that every farmer should have his nut-orchard or grove, as a source of profit.

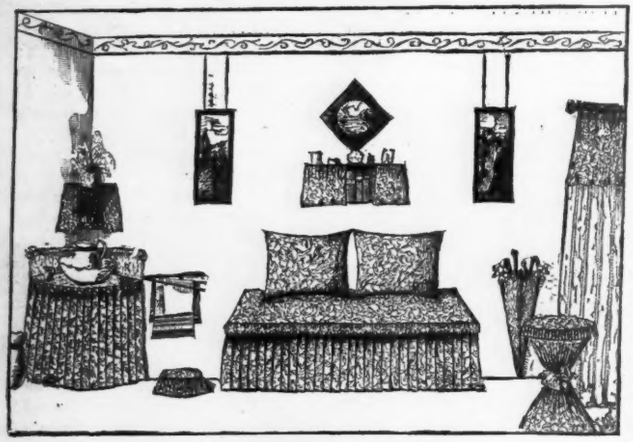
The Pecan tree belongs to the same genus as the hickories (*Carya*), and on account of the olive-like form of its nut, is called *C. olivæformis*. Its natural range is in the valleys of the Western rivers, from Northern Illinois to Texas. How generally it would succeed in the Atlantic States, is yet to be tested. In the Bartram garden, near Philadelphia, is a remarkable specimen, ninety-one feet high; this tree rarely perfected its fruit, though a young one in the same garden frequently did so. Like other hickories, the Pecan is difficult to transplant, and rarely succeeds if the trees are over one or two years old, unless prepared in the nurseries by root-pruning, and several times transplanting. Mr. Wilson prefers planting the nuts in place to setting out young trees, and in his advice to "get fresh seed nuts of a good variety for planting," he recognizes the fact that the nuts from the wild trees vary greatly. Some of the trees in a grove of Pecans, bear nuts twice as large as the average of those offered for sale, and with very thin shells and sweet kernels. The writer was stationed in Texas one autumn, near a fine forest of Pecans. The servant kept the mess table supplied with nuts of a size and quality we had not before met with. Upon investigating the matter, it was found that the boy watched the ground squirrels, and finding their holes, appropriated the nuts which these provident animals laid up for their winter stores; these, by "natural selection," were the largest and finest possible. Mr. Arthur Bryant says that he never had any success with planting in the fall, and strongly advises to do the work in spring. Nuts for planting must be kept from becoming dry or rancid. Small quantities may be mixed with sand, using at least a quantity equal-

Fig. 3.—A SUNKEN FENCE.

ling the bulk of the nuts, in a box or barrel, keeping them in a cool place. Several bushels may be placed in a heap on the ground, covered with sods or leaves, and then with several inches of earth. Look out for mice and squirrels. The trees, when full-grown, will need to be thirty or forty feet apart, but if the nuts can be spared, it will be well to plant much thicker, and thin the young trees as more space is required. The thinnings will afford poles and small timber, for which there are always numerous uses on a farm. To guard against accidents, it is well to plant two or three nuts near together, and pull up all the seedlings but one,

A Bed-room in Cretonne.

A room fitted up in cretonne, as seen in the engraving, is very pretty, inexpensive, and makes a light and cheerful summer apartment. The prevailing color is pink. Cretonne of a very good quality can be bought for eighteen cents a yard. The pattern here used has a bright ground, which is nearly covered with leaves and pink rose buds. After the walls are kalsomined, which should be of a delicate shade of pink, paste on, as shown, a wide wall-paper border. This adds greatly to the appearance of a plain wall. The lounge is made of a box, six feet long, twenty-three inches wide, and fifteen inches high. Cleats are placed on the inside of the box to hold the lid. A caster should be fastened under each corner, after which the box is ready to cover. Tack on the plaiting for the bottom just over the top, so that the cushion will cover the edge. For the cushion, cut two strong pieces of muslin or partly worn ticking the size of the top of the box, and a piece four inches deep, to be sewed between the top and the bottom of the cushion. One side should be left unsewed until the stuffing has been placed in. For the latter, fine straw or worn out comfortables can be used. Cut a piece of the cretonne the size of the top of the cushion, and make a strip six inches deep, and long enough to go once and a half round the cushion, gather this strip, and sew one side to the piece for the top; draw it over the cushion, and run the other edge of the puff to the underside. The pillows can be of any size, but the larger they are, the better. The frame for the little table is a couple of barrel heads and a small pole thirty inches high. Tack the cretonne on loosely enough to allow it to come together in the middle, after which it is drawn down, tied, and finished with a large bow of pink ribbon or a band of the same material. Make a narrow plaiting of cretonne and tack around the top of the table. The lambrequin for the window is a straight piece, finished at the bottom with a deep hem and sewed on the curtain rings. The umbrella case is not merely ornamental, the pockets are made of the cretonne doubled or lined with some heavy muslin, the back being covered pasteboard. Hang it on the wall with small brass rings, sewed at the top, corners, and bottom; tack a small bow of pink ribbon at each corner of the case.



A ROOM FURNISHED IN CRETONNE.

The corner wash-stand is made of a triangular board, rounded on the outer edge, and supported by three stout legs. Tack the cretonne on the top as seen in the design, leaving it loose at the bottom, so that shoes and other articles can be placed behind it. Cover the top with marbled oil-cloth, and make a screen of dotted Swiss over pink cambric, to tack back of the wash-bowl. The little corner closet which is so convenient for bottles and wash-stand necessities, is made of two ebonized pieces of wood The curtain is hung with small brass rings on a nail which is fastened at each corner. The book shelf is constructed in the same manner. The frames for the panel pictures are ebonized pine, or they can be gilded if preferred. The diamond-shaped frame is also made of pine, covered with garnet velveteen. It makes a very pretty frame, and when it is hung up high it cannot be easily distinguished from a velvet one.

Hanging Shelves.

Shelves of some kind for holding books, papers, etc., are always useful in the kitchen or sitting room. Shelves fastened to the walls are not as convenient as movable ones. If you paper or whitewash the room they are in the way; to fit the paper neatly about them is quite a job, and only a skilful whitewasher can use a brush around bracket shelves without leaving streaks in the wash. A set of hanging shelves can be cheaply and readily made. Take as many pieces of board as you want shelves, of the width and length desired. If there are two windows on one side of the room, not more than three feet apart, make the shelves long enough to fill the wall space between them. Paint the boards or stain them to imitate walnut or oak, or cover them smoothly with glazed cambric, and tack a row of fringe about the edge. If you wish the shelves more ornamental, make narrow lambrequins to tack to the front of the shelves. These can be made of some dark cloth, with bright flowers cut from cretonne appliqued, fastening on with an embroidery stich around the cut-out flower. To fasten the shelves together, procure some stout cord of a color to match the stain or covering of the shelves. Before attaching the cord, cut a piece of board as long as it is desired to have the shelves apart. Place this between the shelves while attaching the cord, and it will hold the shelves just as far apart as desired. The cords supporting the shelves should be strong, and the nail or hook to which the shelves are hung, needs to be stout and firmly driven into the wall. Let us have more hanging shelves.

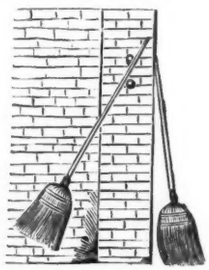
Notes on Present Styles of Dress.

Simplicity is the rule for walking suits, cloth and velvet dresses to be made perfectly plain, and a straight collar or ruche, with a bar pin as the only finish for the neck, bows and ties at the throat and necklaces being completely abandoned. Ribbons, however, appear in the place of flowers on evening dresses, made up into rosettes, the ends cut into sharp points.—Watches, too, instead of being hung by a chatelaine, are now tied by a bright ribbon to the seventh or eighth button-hole, from the top, and worn inside the waist. The touch of color is very pretty in a dark costume.—The hair is still worn in a low knot at the nape of neck for the street, but for full dress is wound in a loose, irregular coil on the top of the head, with a crumpled piece or bang in front. School-girls with golden brown locks bind the hair down with bandeaux of narrow black velvet. It is passed over the head four or five times, and tied in a bow behind the left ear. Young girls carry bags of velvet or satin suspended from the arm by silk cords. These hold their handkerchiefs and pocketbooks, or any bit of fancy work. A monogram can be embroidered on them. Long dove-gray or blue gauze veils seem to be the most popular. They are crossed at the back, and the ends brought around in front, where they are neatly secured by a small lace pin.

A quaint Mother Hubbard apron is crocheted of écru linen thread, in tiny shells, and bordered by a large shell edging. It is trimmed with narrow cardinal satin ribbon, three rows run in across the bottom, one on each side and two through the band. A pocket is put on one side, and tied at the back with broader cardinal ribbon. If a bib is added, it is pinned up with tiny silver or gold pins in some odd design, as are the bibs of all aprons. Narrow black velvet ribbon is worn tight around the throat.—Ear-rings are very small, and many prefer not to wear any, which is perhaps the better way.—Corsage bouquets are prettiest of natural flowers, and are worn high up, on the left side.

Hanging a Broom.

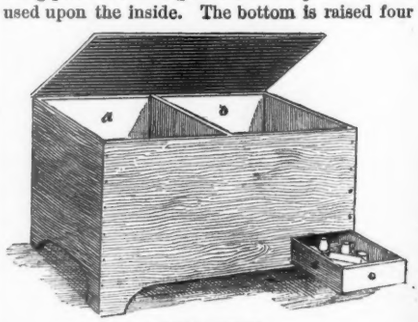
Mr. C. Lederer, Whitesides Co., Ill., sends us a sketch of a plan for hanging a broom, which is convenient, and keeps the brush part from getting out of shape. Two strong nails are driven five inches apart in a perpendicular line, and the handle of the broom is placed between them, in the position shown in the accompanying engraving.



HANGING A BROOM.

A Convenient Flour and Meal Chest.

Half the house-keepers in town and country use the flour and meal direct from the bag, sack or barrel as is needed, resulting in a considerable loss. The flour is unavoidably sprinkled and dusted over the floor and surrounding articles of furniture. This can be avoided by using a chest or box, that is easily made, and may be placed in one corner of the pantry. A desirable size for the chest, is two and a half feet in hight, three and a half feet in length, and fifteen inches wide, made from thoroughly seasoned pine boards, planed upon both sides, closely fitted together and secured with nails and glue. It is divided into two apartments, the larger one, *a*, being used for flour, the one, at *b*, for meal, while near the bottom is a drawer, *c*, in which the rolling pin, flour measure, cup, sifter, spring-balances, and other articles may be kept. The chest should be provided with a close-fitting hinged cover, the whole exterior being painted some light color. No paint or oil is used upon the inside. The bottom is raised four inches from the floor by hollowing out the ends and sides, as shown in the above engraving.



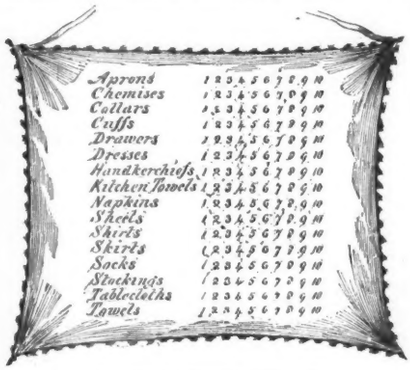
A MEAL CHEST.

THE HANDS.—A "hard-handed" farmer or mechanic need not be ashamed of this mark of his calling. His hands may be "hard," but they may be clean. Always use soft and warm water to thor-

oughly wash the hands. Hard water leaves them rough and unpleasant. Let the hands soak for a minute before soaping them. A nail brush is of great aid in keeping the hands in order; one made with unbleached bristles is by far the most durable. This should be used with soap not only on the nails, but all over the hands, especially on the most soiled portions. Common soaps often contain an excess of alkali, which roughens the skin, and of rosin, which leaves the hands sticky. Castile soap is vastly superior, is quite equal to the highly perfumed toilet soaps, and not very expensive. Keep at hand a lump of pumice stone, with which to rub any special stains and any rough places on the palms. Paint and axle-grease can be removed by first oiling the hands, or lard will answer, thoroughly rubbing it in before using soap. If the skin is disposed to chap, use with the soap a tablespoonful of Indian meal; rub the hands with this thoroughly, and after rinsing apply glycerine mixed with four parts of water, rubbing the hands together until the water evaporates.

A Laundry Cushion.

Any one having washing done out of the house, will find the use of the laundry cushion here illustrated, a convenient method of keeping a list of articles. A full list of the articles likely to be in



A LAUNDRY RECORD CUSHION.

the wash is written with indelible ink on a piece of unbleached linen about six inches long by ten wide. The name of each article is followed by a row of figures from one to ten inclusive. The linen is then sewed to a second piece of the same size and made into a cushion by stuffing with hair or saw-dust. A cord, by which to hang it up, is fastened to the upper corners, and a row of pins is stuck along the edge. The number of any article in the wash is recorded by sticking a pin in a corresponding number opposite the name of the article. If four tablecloths are sent, a pin is stuck in the figure four, and if there are twenty-four napkins in the wash, pins stuck in figures ten, nine, and five, keep a correct count. MRS. BUSYHAND.

A Word to Parents.

REV. E. P. ROE.

See that your child never leaves any task half done or slovenly finished; and therefore give not too many tasks. Thoroughness is the corner stone of success. There is no place in the world now for smatterers, who know a little and only a little of everything under the sun. There is always an honorable place for those who can do any kind of honest work in the best manner. Show the child, from the experience of others, that little or no progress is made by spasmodic and intermittent effort. The world is now so advanced and competition so keen that genius must ally itself with patient, persistent work, and with the deftness which comes only from continuous practice. The young are prone to dream of what they will do in the future. The history of others proves that they will never do much, unless they are doing their present work thoroughly. They do not realize this, and mere arbitrary assertion of the fact usually makes but slight impression. Biographies of successful men, whether read from the libraries or furnished from your memory of neighbors, establish the truth in their minds, and such biographies should be freely read by children.

The Buffalo Moth.

Unlike the common Clothes-moth, the destructive Buffalo-moth is not the larva of a proper moth, or miller, but a beetle. The perfect insect is a very pretty beetle, about an eighth of an inch long, black and handsomely marked with scarlet and white. The grub is about three-sixteenths of an inch in length, but on account of its long brownish hairs appears larger. The insect was first noticed in New York State about ten years ago, but has since spread to such an extent that we have inquiries concerning it from every State. Though most destructive to carpets, it attacks woollens of all kinds as well as feathers and furs. It is in the larval or grub state that the insect does its mischief, the perfect insect or beetle regaling itself on garden flowers, especially the Spiræas. The grub works under the edges of carpets, often making sad havoc, it sometimes takes shelter in a crack in the floor and working along that cuts the carpet on the line of the crack as completely as if it were done by shears. This habit of working in the cracks suggests the utility of stopping up all crevices before the carpet is laid down. Putty, hard soap, and plaster of Paris have been suggested as materials for filling the cracks, especially those between the base-board and the floor. Those who vacate their houses for several months at a time should be careful to not leave the insect in possession, as the results may be most disastrous. The most effective method of destroying the insect while the carpet remains in place is the use of steam. A wet, folded sheet is laid along the edge of the carpet. Upon this cloth several hot flat-irons are passed. These generate an abundance of steam which penetrates the cracks and destroys the insects. Furs or articles of woollen, not conveniently steamed may be placed in a tight box, or a wash boiler and a small quantity of benzine poured in; if the box or vessel be kept closed, the vapor of the benzine will kill this as well as the common Clothes-moth. This is one of the most destructive of the house-keepers pests. The insect is a native of Europe, and is known to science as *Anthrenus Scrophularia*. It is supposed to have been introduced into this country in imported carpets.

Light Work for Mid-Summer.

The months of July and August appear to have been intended for rest by the Author of the seasons. Through the stimulating cold of winter, the fresh, mild breezes of opening spring—even later, when all nature is awake, and we open the doors and windows to catch the sound of birds and insects, and to breathe the odors of buds and blossoms, we can work with a will and feel interested. Even the dreaded "spring cleaning" had its pleasures as we close up the dreary furnaces and stoves and pack away all reminders of the bitter cold. As summer advances, while we are alive to its beauties,

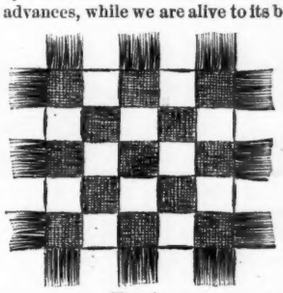


Fig. 1.

we like to sit under the trees, on the piazzas, or lie listlessly in the hammocks. But to most of us rest does not mean idleness; and to be obliged to spend our time for many days with head and hand unemployed, would be misery. "I could be happy on a desert island with my books and work," said a lady some time ago—one who was prominent in society, and actively engaged in charitable work through the winter; but when the time for resting came she had to be busy still in another way. So while it is well to lay down the heavier duties and cares of life for a few weeks, it is a pleasure to have some light work to "take up," and the revived interests in fancy work of late years, gives a wide scope to one's taste and skill. We say revived interests, because embroidery is one of the oldest of ornamental arts, and one in which there has been no advance of late. Knitting too, now in fashion, was one of the favorite occupations of our great grandmothers, and little children in the public schools of that time had stint of "rounds" on their stockings given them as a daily exercise. Home-made edgings and insertings, both knitted and crochetted, are much used now, and it is a pleasure to study out new patterns for them. It is said that good cotton thread is better than linen, although the latter is rather prettier. Hair-pin crochetted edging is very quickly made, and it is pretty and durable. It may also be a foundation for wider and more elaborate edgings. Make a slip loop and pass it over one side of the hair-pin, then turn the pin around, and you will have a loop on each side. Draw up with the hook a loop through the first loop, * take out the hook, turn the hair-pin, and insert the hook in the loop from which it was withdrawn; then make a double crocheted stitch under the left hand loop—repeat from *. Drawn work is very popular and beautiful. Broad insertings are made of it to trim children's dresses, bed linen, toilet sets, etc. We give an illustration of one which may be made of coarse or fine linen. A pretty and inexpensive gift for a lady is a cake-basket cover, made in a square, with fringed sides in this same pattern. Figure 1 shows the way the threads are drawn, and in figure 2 is seen a portion of it finished. A pretty gift for a gentleman is an umbrella case. The foundation is of paste-board. It may be covered with gray linen, or any other plain, durable cloth. Two strips are embroidered and sewed on the front before making up. They may be ornamented according to one's fancy. A monogram or initial is added at the top as seen in figure 3. A very pretty pen-wiper is made to imitate autumn leaves. They are cut out of flannel, red, brown, yellow, like the leaves, veined with silk, and notched on the edges—then grouped together. Another is a carnation pink. The flower is of red flannel, notched and folded like a pink, attached to a wire stem covered with dark-green cambric. The leaves, of cambric, are made on fine wire. This is novel and exceedingly pretty.

ETHEL STONE.

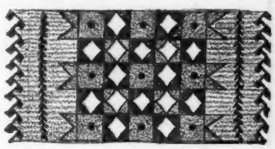


Fig. 2.

Fig. 3.

A Lead-Pencil Sharpener.

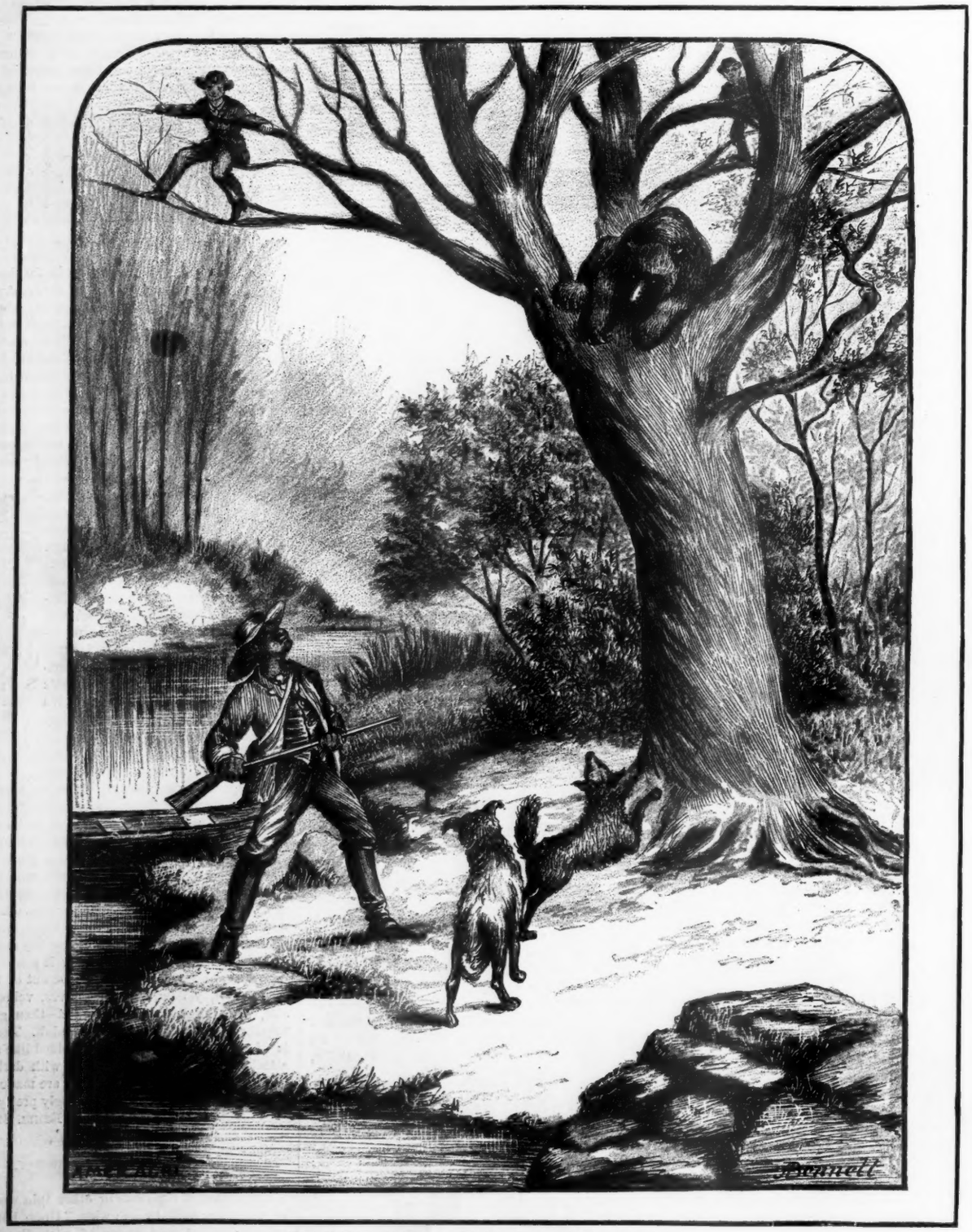
Cut a piece of cigar-box or other thin wood, five or six inches long, by one wide. Upon both sides glue pieces of sand paper of a medium grade. Sharpen the pencil with a knife, and finish the point upon this implement, giving either a round or a flat end, as desired. When the point becomes dull, it may be repeatedly "touched up" on this sharpener without recourse to a knife, and which is a very desirable matter, without soiling the hands. By striking the sharpener against any object, the particles of lead are readily removed.

BOYS & GIRLS' COLUMNS

An Adventure With Bruin.

A VIRGINIAN.

Walter Wheelbin is a Richmond boy who had never experienced any rural sports until October last, when his cousin, George Wheelbin, who lives on the Gauley River, in West Virginia, wrote him a letter in which he kindly insisted that Walter should pay him a few weeks visit, at the same time not omitting to mention that chestnuts, chincapins, persimmons, and wild game were unusually abundant. The invitation promised too much field-sport and mountain air to be declined, and Walter, one frosty morning, alighted at a little station on the Chesapeake and Ohio Railroad, where George, with horses, was waiting to meet him, and after a ride of a few miles, found himself at the home of his country relatives. In the Gauley River are numerous small islands, many of them mainly large rocks, with sometimes sufficient earth to nourish the growth of a few trees and bushes. The one on which the adventure I am about to relate, took place, is known as Dead Chestnut Island, on account of its having a solitary, large, dead chestnut tree, standing on it. One afternoon Walter and George set out in a canoe for the purpose of exploring a number of these miniature islands, the first among which being Dead Chestnut. Just as they were leaving, a noise, as of some animal feeding, and a shaking of the bushes, attracted their attention. They both stood in breathless suspense, with their eyes fixed intently upon the shaking chincapin bushes, when to their horror the huge, black head of some wild beast, suddenly presented itself in full view. For a short time they stood speechless, and then fled for the canoe, shouting, "A bear! A bear!"—"Gone!" ejaculated George,



TREED BY A HONEY HUNTER.

Drawn and Engraved for the American Agriculturist.

pointing to the place where they had left the canoe. "Gone! oh! why didn't we pull it higher up?"—"Too cold to swim, and too swift, too!" said Walter, gazing ruefully into the ice-cold current; "and the island's entirely too small on which to pass the time pleasantly, so long as there's a bear on it!"—"Let's climb the old chestnut," said George, and the suggestion was immediately acted upon. "Get far out on the slender limbs, Walt, where the bear couldn't go, if he should take a notion to come up," said George, but the command was wholly unnecessary, for Walter had instinctively crept as far out as was safe and convenient. From their lofty positions they had a good view of their shaggy enemy, as he roamed at will over the island, picking up mouthful after mouthful of chincapins, and occasionally glancing up, with apparent delight at his treed captives.—"I think I see the canoe away down at the bend," said Walter. "I'm afraid we shall have to try swimming, or else remain here all night."—"I could never stem that current; besides we would both freeze to death in that cold water," replied George, his teeth rattling, and his very frame shivering as a cold, frosty breeze came roaring down the river gorge. "But look!" he added quickly. "Look, he's moving toward the tree!"—"Wonder if we couldn't scare him away?" asked Walter, and then began a series of shoos, etc., to all of which the bear paid no attention, and after walking around the tree two or three times, began very leisurely to ascend.—"Let's jump out and try the water!" yelled George.—"That would break every bone in your body," was the encouraging reply.

The great brute, with no apparent effort, moved slowly up the leaning trunk, until he reached the main fork, in which he coolly squatted, and began to inspect, by alternate glances, his very much frightened prisoners. He did not seem inclined to quit the fork, but sat there quietly, every now and then inserting his paw in a hollow limb, and then withdrawing and sucking it greedily.—"Honey," said George, "Honey. That's what's brought him out here. I have heard father say that a bear will go anywhere, or do anything for honey. Look at the bees he's stirring out, and oh, what eyes!"—"Between the bear, the bees, and the cold, we'll die yet," muttered Walter, between his chattering teeth.—"I believe," said George, pointing down the river, "I believe I see a canoe coming this way."—"I believe so myself," replied Walter, glancing from the bear to the canoe, and then from the canoe to the bear.—"Oh, Walt, I think it is Seeth!" exclaimed George, delighted at the prospect of being released. "Oh, yes, I'm sure it's Seeth!"—"Seeth, sure enough!" shouted Walter, clapping his hands, as that individual's features gradually grew into recognition. "It's Seeth, sure's we're living!"—"Hurrah Seeth! Come quick! A bear! A bear!" they both yelled, waving their hats in order to attract his attention.

Seeth was a good-natured negro, who, before the war, had belonged to George's father. He had caught the canoe as it drifted by his cabin, and upon recognizing it as George's, became greatly alarmed lest some accident had happened to him and Walter, and with this gloomy thought uppermost in his mind, began rapidly paddling up the river in search of them. Upon finding them in such a terrible predicament, he pushed hastily to the shore and ran as fast as he was able for his gun and dogs. Although his cabin was at least half a mile away, he was not long in going to it and returning with his rifle, ammunition, and two dogs. Throwing himself into the canoe, and calling in his dogs, he soon reached the island.

"Be careful how you shoot, Seeth," requested George, who recalled a painful instance of his markmanship of a few months before, when he fired at a crow on the pasture bars and killed a Jersey calf, standing several yards out of range.

The words were scarcely spoken when the roar of the powerfully charged weapon reverberated along the banks of the river without producing any apparent change in the position of the bear.—"Whistled pretty close to my head that time," said Walter, with considerable alarm.—"Moon's in de ram," exclaimed Seeth, who believed firmly in all superstitions. "Other times shoots as straight as any gun you ever seed. In de ram it shoots at least two feet outen de way."—"Then aim two feet the other side of him," cautioned Walter, who, in his fright, seemed to have little, if any, consideration for the welfare of his cousin, who was on the side designated. In a minute the gun was again loaded and fired, and the great, black creature pitched headlong to the ground with a jarring thud, and was immediately pounced upon by the eager dogs. He was by no means dead when he alighted, and Seeth, in his desire to finish the work he had so clumsily begun, and to assist his friends, the dogs, assaulted him with the butt of his rifle. One blow, and the whole scene changed. The bear, infuriated with pain, immediately turned upon his tormentor, and sent him flying around the island at a very rapid speed.

Around and around the island he flew, scampering over the rocks and through the bushes, with the bear and the dogs close at his heels, occasionally turning to deal a blow with his rifle, which he still managed to hold. "Run! run! Seeth!" shouted the boys, thoroughly alarmed for his safety. "Jump into the canoe and push off." This command was obeyed, but no sooner had he taken up the paddle, than in fell the fighting bear and dogs, nearly on top of the poor negro, who lost no time in extricating himself and resuming his flight around the island's circumference, every now and then muttering something about the lack of space being unfit for such an encounter, and that he would prefer more territory the next time he might be so imprudent as to attack a bear.—"Hurrah, they have got him now! stop Seeth, they have got him now!" but Seeth was cautious enough to put the diameter of the island between himself and the scene of conflict before concluding to come to a dead halt. The violent struggling of the bear and the dogs had overturned the canoe and thrown them into the water, where the bear, much weakened by the effects of his wound and fall, rapidly succumbed to the vicious dogs, and George and Walter, who had now ventured from the tree, assisted by Seeth, somewhat recovered from his fright, after belaboring him lustily with clubs and stones until there was no signs of life, pulled him upon the island.—"Plumped him fair and square 'twixt de eyes," blew Seeth between his hurried breaths; "but it tuck him a powerful long time to 'spire." The bear was now dragged into the canoe, and all, including the dogs, were soon afloat.

Considerable surprise was created at the Wheelbin homestead by the arrival of the boys with proof of an adventure of entirely too serious a character to be passed over without causing some conjectures on the part of the older members of the family, as to what the consequences may have been. Early the following morning, Seeth made his appearance with his butcher-knife and skinned the bear, it being decided that he should have the flesh and Walter the hide, which, with great pride, he took to Richmond, and had an overcoat made of it, in which he had some photographs taken, and sent one to George in commemoration of their perilous encounter upon the island.

A few weeks after Walter's departure he received a letter from George, of which the following is a quotation: "Walt, what do you think? That bear wasn't a real wild one at all, but belonged to an old fellow named Hermiter, who lives three or four miles up the river, and when he found out, after so long a time, that you, Seeth, and I had killed him, why, he just raised the biggest fuss you ever heard of, and Seeth, he's nearly scared to death yet, but says there is no use in making any matter about it now, because he has eaten him nearly all up. Old Hermiter raised him from a little cub, and thought the world and all of him, but he managed somehow to escape from his pen and went to the island purposely for honey, so father thinks. It is very humiliating to be deprived of the honors I have congratulated myself upon winning in an encounter with a ferocious animal, by some one coming and convincing me beyond the least doubt, that he was as gentle and harmless as a kitten. Don't you think so yourself? I have never told it before, but I have always thought it remarkably strange that a wild bear would deliberately climb a tree while two boys were up in it. No wonder father shook his head. I don't expect you will so much appreciate your overcoat after reading this statement of the bare facts."

The Doctor's Talks.

In April last I told you something about the hatching of eggs of the toad and frog, and a little of my experience with hatching the eggs of the hen in an incubator the year before. This spring

Fig. 1.

Fig. 2.

I have had the incubator in operation again, and had much better success than before, probably having learned to imitate the old hen more closely. This time, too, I have been able to observe more of the changes that take place within the egg. In figure 1 in April Talks, was shown the egg as it appears after the first two or three days in the incubator, or under the hen. Figure 1 here, shows the same, but the very beginning of the chick, given separately and magnified. A few days later the creature appears to be all head, as in figure 2, and

Fig. 3.

Fig. 4.

looks as if it might turn out to be a serpent rather than a little chicken. Figure 3 gives the appearance in two or three more days, and it is only after ten or twelve days that we begin to make out any resemblance to a chick, as shown in figure 4. It can not be regarded as a very handsome bird, still we can see the beginning of the bill, the eye looks more like a chicken's eye, while the projections that will be the wings, legs and tail, are plainly seen.

Fig. 5.—THE CHICK READY TO PECK.

By this time the bones have begun to form, and the chick grows so rapidly, that it soon quite fills the shell. Indeed, it has to be doubled up in order that it may be stowed (as the sailors say), in so small a space; the head and feet are brought together, and the chick, as in figure 5, is in a position that looks so uncomfortable, that you would think it would like to get out of it as soon as possible. But it can not come out until the twenty-first day, and it is most wonderful to observe how closely this time is observed by the little prisoners. Many

suppose that the old hen pecks at the shell at the right time and lets them out, but this is not so, the shell is always broken from within. As the chick is doubled up as it grows, the bill is always next to the shell, just where it is needed to break the way out to light and air. It is said that there is a hard, horny scale on the bill, to assist in breaking the shell, which falls away soon after the chick is hatched, but I did not think to look for it. Some of the chicks appear to exhaust their strength with the first pecking, and afterwards are not able to liberate themselves, and unless they are helped they will soon die. When first out of the shell, they are wretched looking objects, their down being wet, they seem to be half naked, and quite unlike the lively fluffy little fellows they are as soon as they get dry. I have often said that you need not look beyond your own farms to find wonderful and interesting objects. Can anything be more full of interest, or a greater wonder, than the formation of a living chick, with its many parts, its blood, bones, feathers and all, out of the almost liquid, and apparantly lifeless contents of the egg!

Tree Toads, or Tree Frogs?

One young correspondent wishes to know something about tree toads, and if they are properly toads or frogs. If he means to ask if they are kinds of the common toads and frogs living in trees, I can answer, neither. The tree toads are as different from these, as they are unlike one another, though all belong in the same order, the Batrachians. The creatures are called both tree-toads, and tree-frogs, though most commonly by the former name. Naturalists place the tree-toads in the genus *Hyla*, the one found in the Northern States being *H. versicolor*, the changable-colored, while of the Southern States is *H. viridis*, the green tree-toad. Figure 1 represents the first named, which shows the character distinguishing these creatures from both toads and frogs—the little disks at the end of each of its fingers and toes; these, sometimes called suckers, are supplied with a sticky substance, which allows them to climb upon smooth surfaces of all kinds, even glass. The tree-toad has fine and prominent eyes; the color of this

Fig. 1.—A TREE TOAD.

one varies from pale ash-color to dark-brown, and is marked with blotches of greenish-brown. It has the power of changing its colors to make them darker or lighter, but does not assume any different colors. Like the frogs and toads, the tree toad lays its eggs in the water, and in their younger days they are tadpoles, and during the winter they remain dormant in the mud of ponds, etc. Though quiet during the day, at the approach of evening, they are very active in pursuit of insects. The croak of the tree-toad is familiar to all who live in the country, even if they have never seen the animal. It is heard especially at night, though the creature is not silent during the day. It is a common belief that when their croaking is heard in the day time it is a sign of rain; but careful observations show that the creature croaks in the day time nearly every day, and though the sound must

Fig. 2.—A FLYING TREE FROG.

sometimes be heard just before a rain, the two have no relation to one another. There is but one tree-toad in Europe, and this is so nearly like our Southern one, that naturalists at one time thought they were the same; it is found also in Asia and Africa. There is found in the Island of Borneo, a tree-frog so curious, that I give an engraving (fig. 2,) of it. It has very long fingers and toes, which are webbed their whole length. By filling its body with air, and spreading its webbed extremities, it can sail from the tops of the highest trees and descend in safety. Though called the Flying Tree-frog, it can no more fly than our flying squirrel, which spreads the loose skin between its fore and hind legs, to break the force of its fall. Both, like boys at coasting, find it fun to come down, but getting back to the starting point is not so jolly. At least I did not used to find it so, and I don't think coasting has changed much in that respect since I was a boy. THE DOCTOR.

The Floral Wedding.

My friend Mary Gold received, the other day, a letter from her dear John Quill, describing a wedding that was celebrated at the Greenhouse, when the Blue Bells were rung, and Trumpet Flowers sounded. Sweet William and Polly Anthus were the happy pair. The Greenhouse was beautifully adorned for the occasion with vines, and the Virgin's Bowers were all perfumed with lavender and ambrosia, and box after box of bridal presents stood together in long rows. The hour appointed was four o'clock. Dan de-Lion was one of the earliest arrivals. He was much exhausted on the way, and had a wilted appearance. Old Leander and Mother Wort rode together, but when they were passing through Dog Wood, were upset, and the colt's foot being lamed, they borrowed a sorrel horse. The Snapdragons and Thorns were not invited. Earl Sycamore was so sick that his physician, Doctor Moss, would not allow him to go, and so he mustered strength to write, and let his regrets present themselves. The Snowdrops and Snowballs had gone north on a summer visit to the Iceplants. At length the merry guests began to come in crowds, or flocks, and were received by Madam La Burnham, assisted by the lovely Amaryllis. There were Mr. and Mrs. Orange-blossom, and all their family, and a great many young ladies named Lily and Rose. All the De Luces were there, and a whole troop of Evening Beauties, to whom the Cockscombs displayed their knightly qualities. The most distinguished cavalier was Mr. G. Ranium, who, as is well known, is the Lady's Delight. Mayor Convolvulus paid his addresses to the wallflowers, and a Ragged Robin was seen searching for little Cora Andre, who had gone away to play with Johnny Jump-up and his little sister Violet. There was a Mourning Bride, who sadly remarked that when love lies bleeding, no amount of penny royal could ever make up the loss. She wandered off into the garden among the yews and cypresses, and finally sought the society of Weeping Willow.

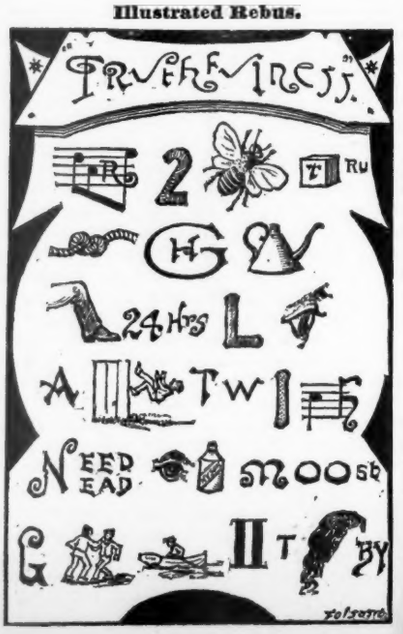
The Primrose sisters came as dignified and unapproachable as ever, and numerous Old Maid Pinks and Bachelor Buttons, looking as aged as century plants, were continually wishing the Balsams would arrive, and inwardly sighed for balm, while the dead leaves of their hopes were rustled by the passing breeze. Lady Teasel and Baron von Tansy made themselves conspicuous by their bitter sarcasm, and the Thistles were so pointed in their remarks that they were driven out with golden rods.

The company became impatient because the Bridal Rose and her Sweet Sultan delayed to come until long past the time, and the joke went mirthfully round as to why Jack-in-the-Pulpit in his clerical attire, did not put in his appearance, but Old Monk's Hood had been engaged to perform the ceremony, so all were satisfied.

At this crisis, Sweet William and Polly came into the large company, followed by Jessie Mine, Rose Mary, Heart's Ease and Love-in-a-Mist, for the charming bridesmaids. The ushers were the Passion Flowers. Nightshade had gathered around, and the Star of Bethlehem shone pale in the light of the new moon, when Crown Imperial, under the linden tree, gave away the bride. After the ceremony the salutations were begun by the Tulips, and sweet congratulations were exchanged by all except Madam Mimosa, who, shrinking in her shivering sensitive way, said "touch-me-not." The dazzling splendor of the scene was magnificently reflected by the Venus' Looking-Glasses. At the ringing of Flora's Bell, a supper was served. There were sweet peas and sugar leaves and honey dew in king's cups, great dishes of pollen, and other delicious things, not omitting to mention the juice of the Madeira Vine. The head waiters were Robin Runaway, Bouncing Bet and Running Rose. Finally there was a grand dance to the merry music of the Canterbury Bell ringers, and they kept this up until the ladies' slippers were worn out.

At this point Venus' Car appeared, gorgeously made of Southern wood, and decorated with evergreen, drawn by ponies named Horse-Chestnut, which the driver, to distinguish them, called Basil and Bay. As soon as the bridal party were in the car, and it began to roll away, that ancient and honorable leather dealer, familiarly called Shoe-Mack, picked up the ladies' slippers and some spearmint, and tossed them after the carriage, while some of the guests rushed on after the prancing steeds, with speedwells and larkspurs, at which the sages retired, disgusted at so much levity. The driver, Michaelmas Daisy, who drank all the currant wine he wanted, put on foxgloves, and away they flew to the docks. The bridal pair set sail on the barque Althæa, expecting to see, after their voyage, London Pride, German Ivy, Rose of Sharon, Indian Cress and China Aster. MIGNONETTE.

Illustrated Rebus.



The Origin of "News."

"What do you understand by the word news?" This is a question that was asked me the other day. "Why! something new that has occurred, I suppose," was my reply. "But do you know how the word originated?" I was obliged to confess my ignorance, and imagining my young readers may be as much in the dark, will tell them my friend's ingenious explanation, which she said she came across in an old book, printed long before you or I were born. N, you know, stands for north; E, for east; W, for west; and S, for south; so the four letters were combined together to form the word NEWS, now used for all that is happening north, south, east and west. A newspaper, therefore, tells us by its very name, that it is a chronicle of events in all parts of the world. A. C.

Does the Mulberry Tree have Flowers?

This question is asked by a young friend. He finds very young mulberries on the tree, but never sees any flowers. The flowers are there, though, not being at all showy, they may readily escape notice. The Mulberry and Blackberry, while they look much alike, are very unlike. The Blackberry is preceded by a large, showy flower, and the little grains of which the fruit is made up, are the many pistils of the flower ripened. The Mulberry fruit also consists of numerous rounded grains, but in this case each grain, or little fruit, is preceded by a separate flower. If you examine the Mulberry early enough, you will find what you take for a young fruit, to be numerous small flowers placed closely together on a little stem. To be sure, they are not showy flowers, their parts being greenish, but they have stamens and pistils (in separate flowers), and the ripening of the pistils of many flowers, makes what we call the fruit of the Mulberry.

A Rare Little Plant—Obolaria.

A young man—I suppose he would not like to be called a boy, as he is studying botany—has

A RARE PLANT.

recently sent me from his home in New Jersey, a plant which puzzled him. The plant was about three inches high, of a purplish-green color, very smooth, and in the axils of its wedge-shaped leaves were one to three small purplish or dull white flowers. The plant's botanical name is *Obolaria Virginica*; it is not common enough to have received any other. The name is from *obolos*, a small coin of the Greeks, but there is nothing about the plant that makes the name appropriate. It is one of the rarest of our plants, and as other young botanists may come across, and be puzzled with it, I give an engraving to help them. It belongs to the Gentian family, though it has but little resemblance to the other members of this family. THE DOCTOR.

Banner Photograph Frame.

In a piece of very heavy paper, not pasteboard, eight and a half by four inches, cut an oval a little above the center, large enough to show as much of the photograph as desired. Cut a corresponding oval in a piece of colored velvet, but a quarter-inch smaller all around. In the two upper corners of the velvet work a spray of yellow wheat with silk floss. Across the lower edge baste a strip of narrow velvet ribbon and work it down with the yellow floss. Along the lower edge make a narrow fringe of sewing silk the color of the band. Thread a needle with the silk doubled several times, sew through the velvet near the edge, tie and cut off at the right length for the fringe. By repeating this across the lower edge, a very pretty fringe is made. Place the velvet flat on a table, lay the paper correctly on it, turn the edges of the velvet up on the paper, and fasten with very thick mucilage. Only the top and two sides are to be turned over; the fringe along the bottom is to hang down. Cut into the velvet around the oval as far as the paper; then turn the pieces over on the paper and fasten them. Fasten a silk cord and tassel to each upper corner of the banner. The photograph is held firmly in place by taking two or three long stitches across on the back. Suspend it on two brass-headed tacks.

Surplus Fruit—What Shall be Done with it?—Evaporating.

One need not be very old to recollect when the sunny-side of a farm house was festooned with strings of apples hung up to dry, while in front of the kitchen door were trays containing various fruits. Fruit dried in either of these methods is dark-colored, and has been exposed to dust and to the visits of insects. The fruit thus dried, when sent to market at the present time, comes in competition with "evaporated fruit," which sells for several cents a pound higher. "Evaporated fruit" is now a regular article in the market, and we receive many inquiries concerning it. The term "evaporated" is applied to fruit dried by artificial heat, excluded from the light while drying, and sometimes bleached by the use of the fumes of burning sulphur during the drying process. The first evaporating machines were so large, and required such a large capital to run them, that their introduction was slow. Within a few years, there have been introduced portable machines, which, as we know from a trial of one of them, will turn out as salable a product as the large affairs. This year it will probably not pay to barrel and send any but the best apples to market, and all those having a surplus of common fruit, should look about for means of disposing of it. There are but two forms into which a surplus of apples can be converted. One is cider, to be disposed of as such, or converted into vinegar. The other is, dried apples. There are now offered a number of driers and evaporators, which, on a small scale, turn out as good an article as do the larger ones. We have no doubt, that in some peach localities, it may pay for a capitalist to put up a large evaporator. We advise all who are likely to have much fruit to dispose of by drying or evaporating, to investigate the matter, and send to the different advertisers for their circulars. An important point connected with the drying or the evaporating of fruit is, the implements used in preparing the fruit for the drier. Apples, for example, must be pared, sliced, cored, etc., before they are ready to go into the drier. Some of these implements work with wonderful rapidity and perfection. The makers of some of the driers supply all the needed accessories. Not only fruit can be profitably dried, but vegetables may also be so treated, and these are improved by being prepared in the rapid-working evaporators. Such vegetables as sweet corn, and Lima beans, will be especially welcome on the table next winter.

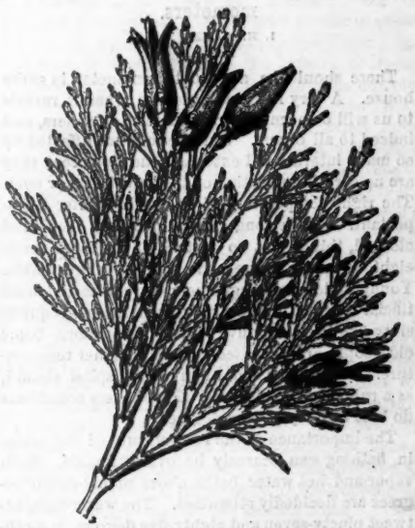
Plants as Air Purifiers.

Dr. Anders has just concluded some valuable experiments with house plants. He inclosed a dozen potted flowering plants in an air-tight glass case, and placed them in the bay window of a sitting room facing the east. Ozone test papers were hung in the case before it was closed. Observations were made for four hours daily during eighteen days, with results showing the presence of ozone in the air of the case. A second series of tests was made with odorous flowering plants—carnations, heliotropes, etc,, with stronger indications of ozone. A third series included "foliage plants"—ferns, dracænas, etc.—with less positive results. Further experiments with plants in flower were made with the case in the out-door air. In these it was found that negative results came on rainy days, thus indicating that bright sunshine is needed to develop ozone. The experiments showed, that the floral organs are specially delegated to the important function of developing ozone. This peculiarly active form of oxygen is produced during the formation of the seed, in connection with the phosphorous compounds there accumulated. Flowers of various kinds have been known to exhibit phosphorescent light in warm evenings.

Ozone is a most wholesome element in the atmosphere, keeping or tending to keep it from becoming polluted with disease germs. It oxidizes, or burns up, noxious accumulations. Plants in flower are therefore to be placed in the front rank as hygienic agents. Ozone is of special value in living rooms, when the air, according to the best authorities, is usually foul. A bay window, filled with flowering plants, will doubtless furnish ozone enough to have a decidedly healthful effect upon the air of the room. It is gratifying to have farther proof that the old-time prejudice against house-plants is ill-founded; instead of contaminating the air of the room, and endangering the health of the inmates, they render it purer.

The California White Cedar.

The term White Cedar, is applied in different parts of the country to three very unlike trees, indeed, they belong to different genera. The tree properly called White Cedar, is *Cupressus thyoides*,



CALIFORNIA WHITE CEDAR.

and more abundant in the Atlantic States than in the interior. Towards the great lakes, the tree generally known as Arbor Vitæ (*Thuja occidentalis*), in more eastern localities is generally called White Cedar. In the mountains of California, a third tree is known by the same name. This is *Libocedrus de-*

currens, our only representative of a genus elsewhere found in Chili and New Zealand. This tree does not occur at a lower elevation than four thousand feet, and above that hight it has a wide range throughout the Sierra Nevada and the mountains of Southern Oregon. The hight of the tree is from one hundred and twenty to two hundred feet, with a trunk naked for eighty to one hundred feet, and seven to eight feet in diameter. The foliage, as seen by the engraving, bears a resemblance to that of the Arbor Vitæ. The timber of this tree is among the most valuable, at least to farmers, of the many fine kinds of California. It is light, yellowish in color, and of great durability, being in this respect rated above that of the Redwood. For rails, and fencing generally, it is much preferred by the farmers to whom it is accessible, to any other timber. Like many other gigantic forest trees, this, when young, and grown without the crowding that it receives in the forest, is a highly ornamental tree, assuming a compact, pleasing form, and especially attractive on account of the deep, rich, glossy-green of its foliage. This White Cedar has been tried in a number of localities in the Eastern States, and while it does not appear to be sufficiently hardy to be recommended for general planting north of Virginia, yet, with the care given it at Rochester, New York, it succeeds in that rather severe climate. Probably, like many other evergreens, it becomes more robust with age, and if afforded slight protection while young, will soon be able to do without it. The trouble with this, and similar trees is, they continue to grow so late in the season, that their wood does not have time to ripen sufficiently to endure the winter. It is all important that such trees have a light and well-drained soil, and one that is not especially rich.

NO MORE PIC-NICS.

Drawn and Engraved for the American Agriculturist.

Temperatures—Practical Hints—Thermometers.

I. H. MAYER, M.D.

There should be a good thermometer in every house. A very little attention to what it reveals to us will be of much practical use to farmers, and indeed to all others. Our feelings are affected by so many internal and external conditions that they are no certain indication of the actual heat or cold. The right temperature of rooms in winter is important. For strong men, properly fed and clothed, this is not so material. To them forty-eight to sixty degrees is felt as comfortable. Young children and aged persons require much artificial warmth. The newly-born infant requires sixty-five to seventy-five degrees, often more. Some old people are benefited by a still higher temperature. The air in a sick room or a hospital should, as a rule, be sixty degrees. Fever cases sometimes do best in forty to fifty degrees.

The importance of the temperature of the water in bathing can scarcely be overestimated. Both vapor and hot water baths above ninety-seven degrees are decidedly stimulant. The warm bath, between ninety-seven and eighty-five degrees, is soothing, and beginning with ninety-seven degrees is suited for infants and of much use in securing a robust growth and laying the foundation for a "good constitution." The tepid bath, between sixty-five and eighty-five degrees, is useful for cleanliness and to promote insensible perspiration—to keep the pores open. The cold bath, between thirty-two and sixty-five degrees, acts primarily as a stimulant, next as a tonic, and finally as a sedative; though few, except strong persons with healthy lungs should indulge in this luxury. The natural temperature of man in health is ninety-eight to one hundred degrees (98.4 degrees) and exposing the whole body or part of it to water thirty-five to sixty-six degrees colder is unsafe. Well or spring water is usually from forty to sixty degrees, and water to be used for bathing if above sixty degrees or below forty degrees should be avoided by the greater part of mankind.

Digestion takes place at ninety-eight to one hundred degrees in man, and in case of low vitality a drink of milk at one hundred degrees or higher is most grateful to the stomach. Fresh water is usually a tonic to the stomach far preferable to any "stomach bitters" or anything else. Ice water, in large or even small quantities, taken by those unaccustomed to its use, paralyzes the functions of the stomach and produces serious results. In experiments in ovens Blagden and Fordyce bore two hundred and sixty degrees, while their own temperature rose only two and a half degrees, but the air was dry and the heat of their bodies was kept down by free perspiration. Higher heat may be endured without discomfort in a dry atmosphere than in districts abounding in moisture. Sixty degrees below zero and even lower has been endured without fatal results. Air at thirty-two degrees contains about ten per cent. more oxygen than at eighty degrees. Hence the vitalizing influence of cold, bracing air, and the rapid breathing or panting of animals on a hot day.

Over one hundred and ten degrees heat of the body indicates the extremest danger in disease, and when the blood of the vertebrate animals exceeds one hundred and thirteen degrees the result is necessarily fatal, as it coagulates one of the albuminous bodies in the muscles. Nearly all, perhaps all infectious material, if thoroughly exposed to two hundred and twelve degrees (boiling heat) is destroyed.

The temperature of a toad and of many varieties of fishes is about fifty-one degrees, and in cold-blooded animals generally it is about the same. The ape has a temperature of scarcely ninety-six degrees; the whale and seal, one hundred and four degrees; and the squirrel, one of the warmest mammals, one hundred and five degrees. That of the swallow and heron rises above one hundred and eleven; of the hen scarcely one hundred and six degrees, which the incubator must imitate; one hundred and seven is fatal to the chick.

During the flowering process plants evolve unusual heat—in some only a few degrees, while in blossoms of *Arum cordifolium* it rises to one hundred and eleven and even one hundred and twenty-one degrees, while the external air is only sixty-six degrees. Growing plants are slightly warmer than the surrounding atmosphere.

A thermometer is useful in many ways. Milk yields best results if kept at or slightly above forty degrees—the same as good spring water. Cream is most readily churned at from fifty-seven to sixty degrees. Curd cheese is best produced by exposing thick milk at eighty-five degrees. Sweet potatoes keep best if never exposed below forty degrees; while fruit of all kinds requires a room under thirty-five degrees. A cellar for bees should be forty degrees; if well ventilated it may be fifty. A wine cellar about sixty degrees is best, both for fermenting and keeping. Grapes are most successfully propagated from cuttings, single eyes, etc., in a temperature of eighty degrees. In propagating houses for soft wood of various vines and plants the bottom heat should be from sixty-five to seventy degrees, with the air about fifteen degrees cooler than the sand—hot-beds the same or ten degrees higher. Many other uses will be found for the thermometer besides telling when it is "ninety-eight degrees in the shade" in summer or below zero in winter.

A Farmer's Work-bench.

A cheap and convenient work-bench is shown in the engravings. The legs are of two by six-inch scantling, thirty-four inches long, and the top is made of a two-inch plank in front, and inch boards at the back. Good pine makes a bench that will last many years, and is easy to handle if necessary to use it outside of the shop. In the front are strips, inch or inch-and-a-quarter thick, six inches wide, with the edge bevelled from centre both ways, as shown in figure 1, *a*, *a*, the slide, *s*, is fitted to move between these strips.

A bench eight feet long, two and-a-half wide, and three feet high, is in good proportion. A wide board coming half way or more down the front of the bench is sometimes used, but by making the bench as shown, you can nail in a bottom to the lower strips, and have all the space under the bench for storing tools, boxes, etc. The vise, *v*, should be of hard-wood, about two inches thick, and eight inches wide at the top. The screw is placed

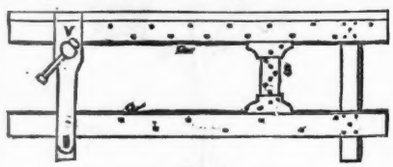


Fig. 1.

as shown in figure 2, and the piece at the bottom is fitted into a mortise and firmly fastened. Cut the four end pieces twenty-seven inches long, and nail them firmly to the legs. Let the two-inch front plank project a little beyond the end pieces, and level the top so that it will be flat and smooth. Set in all the nail-heads an eighth of an inch, that they may not dull any tools. If any of the patent adjustable "dogs" are used, fit them into the plank about ten inches from the end, and six inches from the front edge. A large three-inch screw will answer, but is less convenient. A case of drawers may be made to set in under the bench for holding small tools, brads, screws, rivets, etc.

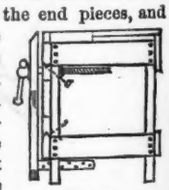


Fig. 2.

HOME-MADE ESSENCE OF CELERY.—Soak half an ounce of celery seed in a gill of pure brandy for two weeks. A few drops will give a pleasant flavor to a tureen full of soup, or the stuffing for a fowl.

The Best for Butter.

There is but one best color for butter, and that that is Wells Richardson & Co.'s Improved Butter Color, no candid investigator doubts. It is the best butter color in the world; is free from sediment or impurity, always ready for instant use, and it imparts to butter that rich dandelion yellow, without a tinge of red, which is the acme of desirability in any butter color.

SUMMER RESORTS.

Elegant Trains—Few Stops and Quick Time—Excursion Rates to All Popular Resorts

The Summer time-table on the New York, West Shore and Buffalo Railway will take effect on Monday, June 23. The accommodations for travel to and from the Catskill Mountains, Saratoga, Lake George, the Adirondacks, Sharon Springs, Cooperstown, Niagara Falls and other resorts in New York are greatly improved. The features that have already made the West Shore route a favorite line for summer travel is the picturesque character of the scenery along the west shore of the Hudson River and the elegance of the passenger coaches and Pullman Buffet Parlor Cars. Special trains have been scheduled which are to be run during the summer without making any but a few necessary stops between New York and the Catskill Mountains, Saratoga and Lake George. Excursion tickets by the West Shore Route and all favorite rail and steamer lines, and embracing all popular river, lake, mountain and seaside resorts, are now on sale at a considerable reduction from regular rates. For time of trains and location of ticket offices please see the Summer Time-Table of West Shore Route in daily papers. A copy of "West Shore Tourist Book," containing hundreds of routes and rates, will be sent to any address on application with three cents in stamps to E. I. BURRITT, Eastern Passenger Agent, No. 363 Broadway, New York.

BAROMETERS *Thermometers, Photographic Outfits for Amateurs, Opera Glasses, Microscopes, Telescopes, Spectacles.* **W. H. WALMSLEY & CO.,** successors to R. & J. Beck, Philadelphia. ☞ Illustrated Price List free to any address

ONE TRIAL OF CHILDREN'S SHOES with the

TRADE

A.S.T. Co.

MARK

BLACK TIP ON THEM, will convince Parents of their VALUE.

Cuff Buttons, Watch Chains.

Watches and jewelry. Many different styles at low prices. Send for circular. CUMMINGS & CO., 38 Dey St., N. Y.

JAMES PYLE'S

PEARLINE

The BEST COMPOUND *EVER INVENTED FOR* **WASHING CLOTHING,** and **everything else,** in **Hard** or **Soft Water, without danger** to fabric or hands.

Saves Labor, Time, and **Soap, amazingly,** and is of **great value** to housekeepers. Sold by all Grocers—but see that **vile Counterfeits** are not urged upon you. **PEARLINE is the only safe article,** and always bears the name of **JAMES PYLE, New York.**

Send 9c. in P. O. Stamps to E. & O. WARD, PRODUCE COMMISSION MERCHANTS, for Circular giving important advice about **SHIPPING PRODUCE.** Also Containing recipe for **PRESERVING EGGS. No. 279 Washington St., N. Y. City.**

H.W. JOHNS' ASBESTOS Liquid Paints

are composed exclusively of the best and purest materials, combined on different principles from any other Liquid or Mixed Paints, and are of a higher grade than have ever before been offered to the public, either in "paste" or liquid form, and are second to none in richness and permanency of color, beauty of finish, and durability. None but the purest linseed oil and the best pigments enter into their composition.

We manufacture forty-eight standard "body" and trimming colors, beside blues, greens, reds, black, etc., etc., and inside and outside whites, and will furnish sample sheets and pamphlets on

STRUCTURAL DECORATION

free, by mail, on application.

ASBESTOS ROOFING.

The standard and reliable portable roofing, for steep or flat roofs in any climate. Skilled labor not required in its application.

Send for Full Descriptive Catalogue, Samples, etc., etc.

H. W. JOHNS' Manufacturing Company,

87 MAIDEN LANE, NEW YORK.

SOLE MANUFACTURERS of Genuine Asbestos Roof Paints, Steam Pipe and Boiler Coverings, Piston and Wick Packing, Millboard, Fire-Proof Paints, etc., etc.

ACME

PULVERIZING HARROW,

CLOD CRUSHER AND LEVELER.

SEND FOR PAMPHLET

NASH & BROTHER,

MANUFACTORY AND PRINCIPAL OFFICE

MILLINGTON, NEW JERSEY.

BRANCH OFFICE, HARRISBURG, PA.

N.B.—PAMPHLET "TILLAGE IS MANURE" Sent free to parties who name this paper.

PHONOGRAPHY OR PHONETIC SHORT-HAND. Catalogue of works by Benn Pitman, with alphabet and illustrations for beginners sent on application. Address **Phonographic Institute,** Cincinnati, Ohio.

SITUATIONS furnished teachers. Application form and copy of our "School Journal," sent for postage. Address **National School Supply Bureau.** 85 Fifth Avenue, Chicago, Ills. Mention this paper.

WELL BORING, ARTESIAN WELL DRILLING & MINERAL PROSPECTING MACHINERY and how to use, is fully illustrated, explained and highly recommended in **"American Agriculturist,"** Nov. No., 1879, page 465. Send for it. Portable, low priced, worked by man, horse or steam power. Needed by farmers in every county. Good business for Winter or Summer and very profitable. Makes wells in earth or rock anywhere. We want the names of men that need wells. Send stamp for illustrated price list and terms to Agents. **Pierce Well Excavator Co. Long Island City, New York.**

FAY'S WATER-PROOF BUILDING MANILLA.

(ESTABLISHED IN 1866.)

This water-proof material, resembling fine leather, is used for roofs, outside walls of buildings, and **inside** in place of plaster. Made also into carpets and rugs. Samples and Catalogue free. **W. H. FAY & CO.,** Camden, N. J.

Caution to Farmers & Dealers

For Safety in procuring your HARPOON HORSE HAY FORKS, *select* only those having thereon an imprint of our TRADE MARK, and thereby save infringement fees.

Catalogues giving reliable information furnished free by Manufacturers and Proprietors,

A. J. NELLIS COMPANY, Pittsburg, Pa.

Also Mf'gs Nellis' Mounted and Floating Harrows, Agt'l Steels, O'm't'l Fencing, Road Graders, &c.

FAMILY BIBLES! 2500 Engravings. New type and features Prices greatly reduced. Big discounts to agents. H.L. WARREN & CO. 1117 Chestnut St. Philadelphia

AGENTS WANTED for the LIVES OF

BLAINE AND LOGAN

By Col. THOS. W. KNOX. Outsells all others 10 to 1. Authorized, Authentic, Impartial, Complete, the *Best* and *Cheapest*. 500 pages $1.50. Sells like wildfire. 50 per cent. to Agents, and Outfit *free*. Send for Circulars, Extra Terms, etc., to **HARTFORD PUBLISHING CO., Hartford, Conn.**

JUST PUBLISHED.

Practical Forestry.

A Treatise on the Propagation, Planting, and Cultivation, with a Description, and the Botanical and Popular names of all the

Indigenous Trees of the United States,

BOTH EVERGREEN AND DECIDUOUS, WITH NOTES ON A LARGE NUMBER OF THE MOST

VALUABLE EXOTIC SPECIES.

By ANDREW S. FULLER,

AUTHOR OF THE "STRAWBERRY CULTURIST," "GRAPE CULTURIST," "SMALL FRUIT CULTURIST," ETC., ETC.

ILLUSTRATED.

In his Preface, the author says: "Many a time during my life have I felt the need of some one volume of moderate size, containing the names and descriptions, however brief the latter might be, of all the trees indigenous to the United States. Having waited in vain for the appearance of such a book, I have attempted to write one myself, with the hope that it will be of service, not only to those who may desire to raise forest trees for pleasure or profit, but to others, who, like the author, may occasionally visit different parts of the country, and need some such guide, that will help them to call to mind the names, as well as to assist in identifying the different species of trees to be found in our forests. I have written it for those who are not supposed to have given the subject of forestry any special attention, and for this reason purposely avoided using any greater number of scientific and unfamiliar terms than was actually necessary in describing the various species and varieties. Furthermore, at the suggestion of the publishers, I have been as brief as possible, in order to make a book that can be sold at a price within the means of all, and one that will not even deter the summer tourist, who is about to spend a few days or weeks in the country, from dropping a copy into his grip-sack before leaving home."

CLOTH, 12mo. PRICE, POST-PAID, $1.50.

Address Publishers of American Agriculturist,

David W. Judd, *Pres't.* **Sam'l Burnham,** *Sec.*

751 Broadway, New York.

TURNIP SEED.

All grown from carefully selected Robts.

The following varieties will be mailed *post-paid* upon receipt of price affixed: *Early White Dutch, White Strapleaf, Red-top Strapleaf, Cow-horn, Improved American Rutabaga, Long White French, Sweet German, Large Yellow Globe*, 10 cts. per ounce, 25 cts. 4 ounces, 75 cts. per pound. Prices for larger quantities to dealers, either in bulk or packets for retailing, will be given upon application.

B. K. BLISS & SONS, 34 Barclay St., N. Y.

JOHN SAUL'S

CATALOGUE of New, Rare, and Beautiful Plants for 1884 will be ready in February with a colored Plate.

It is full in really good and beautiful plants, as well as all the novelties of merit.

The rich collection of fine Foliage, and other Greenhouse and Hothouse Plants, are well grown, and at low prices.

Free to all my customers; to others, 10 cts; or a plain copy gratis. Catalogues of Seeds, Roses, Orchids, Fruits, etc., gratis, **JOHN SAUL**, Washington, D. C.

AND OTHER TREES, NEW BERRIES;

POTTED PLANTS;

May King Strawberry; Marlboro Raspberry; Early Cluster Blackberry, &c., &c. Catalogue Free. **JNO. S. COLLINS, Moorestown, N. J.**

Rumson Nurseries.

The Great New Quince,

"MEECH'S PROLIFIC,"

the most wonderful of all new fruits.

Supply depot of Mulberry Trees for the U. S. and Canada. Send for Circulars.

HANCE & BORDEN, Red Bank, N. J., & 31 Fulton St., N. Y.

1838 1884 **Pomona Nurseries.**

PARRY STRAWBERRY:

A Seedling of Jersey Queen—Strong, healthy grower, **Perfect Flower**, very productive; Most beautiful bright color, large size, highest flavor, and firm.

BEST for MARKET or FAMILY use, MARLBORO, the largest early Raspberry. WILSON, JR., the largest and most productive early Blackberry. HEADQUARTERS FOR KIEFFER PEARS. A complete list of Small Fruits, GRAPES, Currants, etc. Catalogue free. WM. PARRY, Parry P. O., New Jersey.

H. G. CORNEY, SUCCESSOR TO E. P. ROE.

CORNWALL-ON-HUDSON, N.Y.

and for many years Superintendent of these Celebrated Nurseries, offers a large and choice assortment of **Potted and Layered STRAWBERRY PLANTS**, for summer planting. All the new and standard kinds, including Roe's new seedlings, **Moodna** and **Polopel**. Pure plants at popular prices. Descriptive Catalogue, with full cultural notes, free. Address as above.

POT-GROWN STRAWBERRY PLANTS.

The Best New and Standard Varieties. Catalogues free.

JOSEPH D. FITTS, Providence, R. I.

STRAWBERRY HULLER. By mail, 8 cents each; 4 for 25 cts.

A. S. BUNKER, Lawrence, Mass.

NEW STRAWBERRIES CHEAP!

and all the old ones of value in **POTS** or layers for Summer and Fall planting. *Extra stock at fair prices.* **Plant now Fruit next June** *Circulars free.* **HALE BROS. South Glastonbury, Ct.**

Raspberries, Blackberries, Currants, Grapes, for Fall planting

½ Million

SHARPLESS, WILSON, Jersey Queen, Old Ironclad, Lacon, Manchester, Big Bob, and other Strawberries. Cuthbert, Reliance, and Brandywine Raspberries. Wilson and Kittatinny Blackberry and Cranberry for fall planting. Rates low. Write for Circular and Price list to **J. & J. L. LEONARD, Ionn, N. J.**

P. S.—N. Y., June 2, 1884. Gentlemen: I write to say both the Strawberry Plants and the Sweets are perfectly satisfactory. R. W. H.

200,000 Peach trees for fall of 1884, including some seventy-five (75) of the best varieties suitable for all sections of the country. A full stock of Apricots, Nectarines, Almonds, and all Fruit and Ornamental trees. Small Fruit Plants, vines, and a large stock of Grape vines, and Wilson's Early Blackberry plants, the latter grown from root cuttings. Circulars ready about Aug. 1st. No travelling agents. Order direct, and secure best stock at lowest rates. CHAS. BLACK & BRO., Village Nurseries, Hightstown, N. J.

WHITE POND LILY Roots by mail 25cts. stamps: 5 for $1 bill; 100 per exp. $5. The **SIDESADDLE FLOWER** or **SARRACENIA** at same prices. **ORDER NOW.** **ARBORVITÆ** for Evergreen Hedges. By mail 1,000 plants, 4-in. **$1.50**; 6-in. **$2**; 10-in. **$4.** Plant Aug. and Sept. **GEO. PINNEY**, Sturgeon Bay, Wis.

NOW IS THE TIME TO PLANT

POT GROWN STRAWBERRIES

to secure a good crop next season. Our plants are in the finest condition. Catalogue containing full cultural directions mailed free. **ELLWANGER & BARRY,**

Mount Hope Nurseries. **Rochester, N. Y.**

Mention this paper.

FARMERS ATTENTION!

THE GREATEST DISCOVERY YET. **THOUSANDS OF TESTIMONIALS.** For Particulars Address, **WHEAT!**

J. C. EVERITT, Lima, Ind.

PRODUCT of 200 ACRES SEED WHEAT

(Ready for Shipment July 20th.)

CROWN EXPRESSLY FOR SEED.

Comprising these hardy and productive varieties: **TUSCAN ISLAND, VALLEY, MARTIN'S AMBER, RED RUSSIAN, HYBRID MEDITERRANEAN, LANDRETH'S NEW WHITE, CANADIAN AMBER, OSTER'S AMBER, IMP'D LANCASTER RED, &c.**

SPECIAL OFFER Sample of each, price, history, description, and my **"Treatise on Wheat Growing, or how to grow 50 bushels per acre,"** sent on receipt of **6 cents in postage stamps.**

SAMUEL WILSON, —SEED GROWER,— **Mechanicsv'le, Bucks Co., Pa**

OUR FIELDS OF SEED WHEAT Never looked finer. We are growing **all the choice new varieties** as well as the old standbys. The **Golden Prolific, Hybrid Mediterranean,** and **Martin's Amber** are attracting the most attention. Our Fall circular mailed **Free,** will tell you all about them. **IMPLEMENTS.**—If you want a first-class Cider Press, or the best Fodder Cutter, or Corn Sheller in the country, write to us. **JOHNSON & STOKES,** Philadelphia, Pa.

PEACH TREES suited to all sections. Apple trees, extra long keeping varieties. Kelfer and Leconte Pears. A full line of all kinds of Nursery stock cheap. Trees, Grape Vines, Small Fruit, and other plants by mail. Catalogues showing how and what to plant, free. RANDOLPH PETERS, Wilmington, Del.

50,000 WHITE MULBERRY SEEDLINGS, for Silk Culture. Fall of 1884. 10 to 15 inches, $5 per M; 15 to 24 inches, $10 per M. $1 and $1.50 per 100; by mail, prepaid. Address, CHAS. BLACK & BRO., **VILLAGE NURSERIES, Hightstown, N. J.**

ROSE PLANTS. Perles, Niphites, Mermets, Bousilines, Cooks. Fine plants, cheap. E. V. HAUGHWOUT, Madison, N. J.

WHEAT CULTURE!

THE SEED DRILL REGULATOR

SAVES two-fifths of the Seed and one-half of the Fertilizer. Lightens the draft. Prevents clogging. Seed will come up several days sooner. **50** per cent. more **seed will come up.** Produces strong plants and large yield. Send for pamphlet *"How to Raise Wheat."* **Seed Drill Regulator Co. Lemont, Centre Co. Pa.**

IF YOU WANT TO KNOW all about **JOHNSON GRASS** send to HEADQUARTERS for Pamphlet. Address, HERBERT POST, Postburgh, Dallas Co., Alabama.

18,000 Carpenters and Farmers

now use our **Late Make Filers** to file saws, so they will cut **faster** than ever. **Teeth** all of **equal size,** Pitch and Bevel. Single one sent free on receipt of $2.50, where no Dealer keeps them for sale. A discount to Dealers or others wishing to sell. For Illustrated Circulars, *Testimonials* from persons who use them, etc., address E. ROTH & BRO., New Oxford, Penna.

Post-Office Money Orders make payable at Gettysburg, Pa.

Lifts **20** to **50 tons** worked by two men; 5 sizes. Price, $35 to $70. Stands on runners. Circulars free. **H. L. BENNETT, Westerville, O.**

Potato Diggers.

Will Pay their cost first season. Send for Circular.

A. B. COHU & CO., 197 Water St., N. Y.

NEW SEEDLING STRAWBERRY, "THE HENDERSON."

This new Strawberry originated with Mr. Geo. Seymour, South Norwalk, Ct., who named it in honor of his senior partner, and who also places the variety exclusively with us for distribution. The fruit is of the largest size, early, and immensely productive, **but its excelling merit is its exquisite flavor.** A beautiful colored plate of the **"HENDERSON"** sketched from nature, we will mail together with Descriptive Circular and Price List, on receipt of a two-cent stamp.

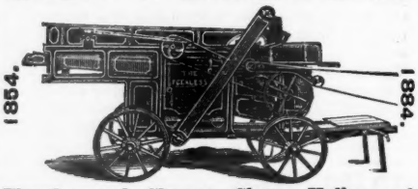
PETER HENDERSON & CO., 35 and 37 Cortlandt St., N. Y.

☞ **NO FARMER SHOULD BE WITHOUT**

DARNELL'S PATENT FURROWER AND MARKER! SEND FOR CIRCULAR

H. W. DOUGHTEN Manufact'r, **Moorestown,** (Burlington County), **N. J.**

THE PEERLESS



Thresher and Cleaner—Clover Huller and Cleaner—Straw-Preserving Rye Threshers—Railway and Lever Powers—The Howland Feed Mill—The Aspinwall Potato Planter, and Digger. Our machines are guaranteed to work well, and have received the highest testimonials and cannot be excelled. **B. GILL & SON,** Trenton Agricultural Works, Trenton, N. J.

HEEBNER'S PATENT

Level Tread Horse Power

WITH SPEED REGULATOR.

Heebner's Improved Little Giant Threshing Machine.

No other Power is as powerful and easy for the horses. The Level Lags and Speed Regulator are the most valuable improvements ever made in horse powers. See that you get Heebner's, any other with level lags will be an infringement upon our patents.

The Little Giant has more good points than any other Thresher. None can do work as fast, nor any better, and none are better made. Union Feed Cutter, Drag and Circular Saws, etc. Send for Illustrated Catalogue. **HEEBNER & SONS, Lansdale, Pa.**

THE LION ENSILAGE AND FEED CUTTER.

Combining the latest Improvements.

THE BEST ENSILAGE AND FEED CUTTER Manufactured.

For full description, send for illustrated catalogue and price list. Address, THE BELCHER & TAYLOR AG'L TOOL CO., Chicopee Falls, Mass.

POTATO DIGGERS.

WHITE OR IRISH AND SWEET.

The **"PLANET JR." WHITE POTATO DIGGER,** is remodelled for 1884, with remarkable improvements made after careful observations during the whole digging season of the past year.

The **"PLANET JR." SWEET POTATO DIGGER,** is made improved for 1884, and is a perfect tool for the purpose intended.

Both tools are guaranteed to give satisfaction, or money refunded; send for Descriptive Circulars, and also for a full Catalogue of the **"PLANET JR." Horse Hoes, Cultivators, Wheel Hoes, Seed Drills, and Hand Plows.**

S. L. ALLEN & CO., Patentees and Manufacturers,

127 and 129 Catharine Street, Philadelphia, Pa.

"ECLIPSE"

The Original Self-regulating Solid Wheel.

VICTORIOUS AT WORLD'S FAIRS.

Centennial, '76, Paris, '78, Australia, '80, Atlanta, '81, Chicago Railway Exposition, '83.

The Strongest Mill Built.

Farm Pumping, Grinding Irrigation, Drainage, &c.

Adopted by *U. S. Government* and all **LEADING RAILROADS.** Tested 17 years.

TWENTY SIZES. 3-4 to 40 Horse Power.

Also, Standard Feed Grinders, Pumps for House, Farm and R. R. use, and a full assortment of Stock and Reservoir Tanks. Address.

ECLIPSE WIND ENGINE CO., Beloit, Wis.

L. H. Wheeler, Boston, Mass. Malvin B. Shurtz, Baltimore, Md.

THE OLD RELIABLE HALLADAY

STANDARD WIND MILL

27 YEARS IN USE.

GUARANTEED

Superior to any other make.

17 Sizes–1 to 40 H. Power

Adopted by U.S. gov. at forts and garrisons and by all leading R. R. Cos. of this and other Countries.

Also, the

Celebrated I X L Feed Mill,

which can be run by any power and is cheap, effective, and durable. Will grind any kind of small grain into feed at the rate of 6 to 25 bushels per hour, according to quality and size of mill used. Send for Catalogue and Price-List. Address

U. S. WIND ENGINE & PUMP CO., BATAVIA, ILL.

THE DANA

CENTRIFUGAL-GOVERNOR

WINDMILL.

This is the best working, and the most powerful Wind-Engine in the world, because of—*first*, the superior excellence of its self-regulating mechanism, and *second*, the better form and position of its sails. The facts and reasons which support this claim are set forth in our Descriptive Catalogue, Second Edition —1884, for which apply to

The Dana Windmill Co.,

FAIRHAVEN, MASS., U. S. A.

THE PERKINS'

Wind Mill

is the Strongest and Best Self-Regulating Wind Mill made. Full instructions for erecting sent with the first mill. **All Wind Mills warranted.** For Circulars and Prices address

The Perkins' Wind Mill & Ax Co.,

Agents wanted. **Mishawaka, Ind.**

THE CHAMPION

WIND MILL POWER.

The Best in the World.

It is perfectly self-regulating, and presents no unnecessary surface to the wind. Pronounced by millwrights and mechanics to be superior to all other mills made. Do not buy until you have investigated the Champion. All information regarding the mill free.

POWELL & DOUGLAS, Waukegan, Ill.

IMPROVED FARM IMPLEMEMTS!

Improved Steam Engines, Best Railway and Lever Horse-Powers. Threshing Machines. Straw-Preserving Threshers, La Dow's Disc and Steel Spring Tooth Harrows. Eagle Sulky Horse Rakes. Cultivators, Feed Mills, Feed Steamers, etc. etc. WHEELER & MELICK CO., Albany, N. Y. Established 1830. Send for Illustrated Catalogue.

Champion Grain and Fertilizer Drill.

POSITIVE FORCE FEED DISTRIBUTERS.

FERTILIZER ATTACHMENT

Unequalled, and is warranted to distribute accurately, evenly and easily *any* commercial fertilizer—wet or dry.

Draft light and easily handled. Construction simple. Materials and workmanship the best. We also make the **WHIPPLE SPRING TOOTH SULKY AND FLOATING HARROWS, CULTIVATORS, &c.**

These HARROWS are adapted for use on all kinds of soil, and are the best *pulverizers* known. No farmer can afford to be without one. Ample time given for trial before settlement. Attachments for sowing grain, grass-seed, and fertilizers, furnished with Sulky Harrows when desired. Send for pamphlets describing latest improvements in Harrows and Drills

GERE, TRUMAN, PLATT & CO., Owego, Tioga County, N. Y.

7,000 CHALLENGE WIND MILLS.

IN USE IN EVERY State and Territory of the U. S. It is a sectional wheel, has been made by us for 15 years, and has never blown down without tower breaking, a record no other mill can show. **MILLS SENT ON 30 DAYS TEST TRIAL. BEST FEED MILLS, CORN SHELLERS, ETC. GOOD AGENTS WANTED** in all unassigned territory. Catalogues free. **CHALLENGE WIND MILL AND FEED MILL CO.,** Batavia, Kane Co, Ill.

J. A. CROSS & CO.,

Manufacturers of

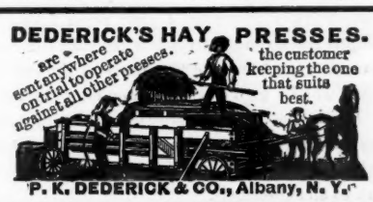
HAY CONVEYORS,

For Straight and Curved Track.

ENSILAGE BUCKETS, POST, FLOOR, AND OTHER PULLIES.

Send for Circular and Testimonials. **Fultonville, N. Y.**

DEDERICK'S HAY PRESSES.



are sent anywhere on trial to operate against all other presses. the customer keeping the one that suits best.

P. K. DEDERICK & CO., Albany, N. Y.

WHITMAN'S IMPROVED

SEELEY PATENT

PERPETUAL HAY AND STRAW PRESS,

Received First Premium at N. Y. State Fair, 1880, 1881 and 1882, and Grand Gold Medal in 1883, over Dederick and others. **The only perfect Hay Press made.** Puts 10 tons in car. Most simple and durable. A bale every 3 minutes. Satisfaction guaranteed. Three bales to any other Press' two. Send for Circulars. Also Horse-Powers, Road Graders, Cider Mills, Corn Shellers, Feed Cutters, etc. Manufactured by **WHITMAN AGRICULTURAL CO., St. Louis, Mo**

"THE BEST IS CHEAPEST."

ENGINES, Horse Powers **THRESHERS** SAW-MILLS, Clover Hullers

(Suited to all sections.) Write for **FREE** Illus. Pamphlet and Prices to The Aultman & Taylor Co., Mansfield, Ohio.

The National Iron Fence Company

is fencing farms, ranches and railroads with the latest, best and cheapest fence now in use. All iron. Any kind of wire can be used. This fence received the highest certificate of merit at New York State Fair, 1883. Live and responsible agents wanted in every county in the United States. For circulars send to office of NATIONAL IRON FENCE COMPANY, 22 Cortlandt Street, New York.

BINDER TWINE

TRADE MARK E

TRADE MARK E

After a test of four years, has the unqualified endorsement of machine-makers and farmers throughout the grain-growing region. It will bind more grain to the pound, with fewer breaks, than any other twine made; is strong, even, free from bunches and knots; and by saving the time of the farmer, is worth double the price of other twines. Ask your agent for **"DIAMOND E. BINDER TWINE,"** and take no other.

SUPERIOR

GRAIN DRILLS,

With Adjustable Force Feed, Spring Hoe, Hoe Pressure and Fertilizer Attachments.

Superior Broad-Cast Seeders,

Cider Mills, Hay Forks, Carriers and Equipments. Descriptive Catalogues free.

The SUPERIOR DRILL CO. Springfield, O.

KEMP'S MANURE SPREADER

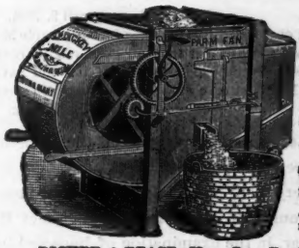
PULVERIZER and CART COMBINED.

Greatest Agricultural Invention of the Age! Saves 90 per cent. of labor, Doubles the value of the Manure. Spreads evenly all kinds of manure, broadcast or in drill, in one-tenth time required by hand. Illustrated Catalogues free.

KEMP & BURPEE MF'G CO., Syracuse, N. Y.

THE CELEBRATED

"A. P. DICKEY" FANNING MILLS.



For Farm and Warehouse use for all kinds of Grain and Seeds. These Mills are used in every corner of the civilized world, and for cleaning almost everything. They are guaranteed to be superior in all respects to any other Mill made. Address

DICKEY & PEASE, Manuf'rs, Racine, Wis.

[This is the Firm that makes the **Two Section Cast-Iron Field Roller** and **"Peerless" Corn Sheller.** Their goods are always considered among the best made.]

$50 REWARD

will be paid for any **Grain Fan** of same size that can clean and bag as much Grain or Seed in one day as our **Patent MONARCH Grain and Seed Separator and Bagger,** which we offer to the public at a low price. **Send for circular and price list,** which will be mailed **FREE.**

NEWARK MACHINE CO., Newark, Ohio, U. S. A.

UNIVERSAL MILL.

The Newell

Pulverizes everything—hard, soft, sticky, and gummy. Grain, Drugs, Chemicals, Clay, Guano, Cotton Seed, Bark, &c., &c. A wonderful machine for grinding Corn, Oats, Feed, &c., &c. Steam Engines and Boilers of all sizes, for Farmers' and Manufacturers' use—at lowest prices. Send for Circular. Address,

34 Cortlandt Street, New York.

The Agriculturist's Microscopes.

They are still coming—the most gratifying compliments as to the superior quality and handsome appearance of the New *American Agriculturist* Mi-

croscope, which we have had expressly manufactured for the friends and workers of the *American Agriculturist*. Here are some sample replies:

NEW SMYRNA, FLA., April 30, 1884.
"I have received my Microscope, and I am more than paid for the money that I gave for it. It is just what I have been wanting for some time, and it is just what every one needs." J. E. THOMPSON.

WETHERSFIELD, CT., May 20, 1884.
"I would also acknowledge the receipt of the Microscope, which came safely to hand, and is a very neat, tasty little instrument." J. W. GRISWOLD.

ITHACA, N, Y., May 19, 1884.
"I received the Compound Microscope to-day, and after a careful examination, I can cheerfully say it is better than my highest expectations. As to the quality of work on it, the makers' name is a sufficient guarantee for that. Please therefor, accept my thanks."
H. W. SMITH.

YPSILANTI, Mich., May 19, 1884.
"The instrument exceeds anything I ever saw for the amount of money invested in it. It is certainly a marvel." PROF. J. H. HOPKINS.

FARMLAND, Ind., June 4, 1884.
"The Microscope sent by mail fully meets my expectations." N. W. WRIGHT.

EWART, Iowa, April 9, 1884.
"Please find enclosed $1.25 for one of your Simple Microscopes. I am a subscriber to your good old journal, and have the some confidence in you that I would have in a brother. I will get up a club for your paper in some future time." DANIEL F. WHITE.

This is the season of the year when these Microscopes can be employed to a great advantage by farmers, in very many ways. In fact, one of these Microscopes ought to pay a farmer ten times its cost every year, in the examination of bugs and insects of various kinds, which are injurious to vegetation.

The *American Agriculturist* for March, contains a full description of this new and beautiful Microscope.

If you have not this number of the paper, and would like to see the description, write to us, and we will forward it to you. This Microscope is sent, delivered free, by us, to any part of the United States and Territories for $2—and delivered free to any actual subscriber of the *American Agriculturist* for 1884, for $1.25. Furthermore, we will present one, delivered free, and send the *American Agriculturist* to any new subscriber, post-paid, for $2. Still further, we will present this Microscope to any present subscriber, delivered free to him, if he sends us two new subscribers to the *American Agriculturist* for one year, at $1 50 each.

How it is Regarded Abroad.

"The London Morning Post," No. 34,947, over a century old, and one of the leading papers of the Old World, thus pleasantly alludes to this journal: "We learn that with the July part of the *American Agriculturist*, Mr. Joseph Harris will attach himself to the editorial staff of that journal. One of the pleasantest of agricultural writers, and with the knowledge that an education at Rothamsted must give, this gentleman is to be congratulated on renewing his connection with the journal that has more of *the ring of the domestic hearth than any other Agricultural Journal in the world.*"

"The Frome (England) Times and Agricultural Journal" for the Counties of Somerset, Wilts, and Dorset, says: "The *American Agriculturist* for July, 1884, is the most superb number of that periodical issued in its 43 years of existence. This is the best and most *home-like agricultural paper published*, and ought to have a large sale in this country" (England).

Mr. Henry F. Moore, F. C. S., the agricultural editor of the "Times," in a congratulatory communication to the Publishers of the *American Agriculturist*, says: "It is a capital paper."

Do Not Fail

to immediately inform us if your paper does not promptly reach you. Postmasters generally through the country are friends of the *American Agriculturist*, and will be glad to aid you and us is discovering the cause of any miscarriage, whereby your copy fails to reach you on time. The *American Agriculturist* is now mailed as regularly as clock work to all subscribers.

Kind Words.

At no time has the *American Agriculturist* received so many flattering notices from the press and from its subscribers, as now. We thank our cotemporaries for their kind words, and our subscribers and friends for their appreciative letters. We have simply to say to one and all, that we shall continue to improve the paper with every issue. The May, June, July and August issues are an earnest of what it is to be in the future. To the old staff of editors and writers who have been with us so many years, we are making accessions, so that the *American Agriculturist* is now stronger editorially than at any former period of its existence. Mr. Allen, the founder of the paper, and for so many years its publisher, may well feel a pride in the success, which this journal, started over 40 years ago, has now attained.

Hon. W. I. Chamberlain, Secretary of the Ohio State Board of Agriculture, writes: "I am glad to learn that Mr. Harris has begun to write for the *American Agriculturist*. I shall begin to take the paper again at once, as will very many others."

Illustrations.

Will contributors invariably bear in mind our request to forward plain and simple sketches and designs with their manuscript. Our artists will make the engravings. The June, July and the current numbers, indicate what the illustrated features of the *American Agriculturist* will be hereafter.

To-Day.

Now is the time to subscribe for the *American Agriculturist*.

You may be busy on the farm, in the garden, or in the household, during July, August, and September.

But those are the months when you may require hints and suggestions, more than ever.

You will find them in the *American Agriculturist*.

Then the beautiful pictures in each number will interest you when you come in tired from a hard day's work.

They will both instruct and entertain your wife and little ones.

We propose to make the department for the children more interesting than ever. We want every boy and girl in the land, who reads the *American Agriculturist*, to look forward anxiously every month for its appearance.

And then, when you have read all the interesting things in the Children's Department, we want you to suggest to us anything more that you would like to see there.

Several juvenile subscribers have told us recently that, they would like to have the Puzzles and Charades which were formerly in this department.

Well—we are going to oblige you in this respect, and have some more of them from time to time, in the future.

Old Subscribers.

We are now classifying by States, counties and towns, all the vast army of subscribers to the *American Agriculturist* during the past ten years. We expect that every one now living, who is not now a subscriber, *will hear from us* soon. To this end, will every subscriber within ten years, who is not now a subscriber, and who has within that period changed his post office address, immediately notify us of the fact. The names will then be properly classified under the right Post Offices.

Westward, Ho!

Very many of our readers are writing, thanking us for what they esteem as valuable information, regarding the Far-West.

One of our editors will make his extensive annual tour through the Western States and Territories, in quest of information for those of our readers who are seeking Western Homes, and wish to know the best locality in which to settle.

During the last eigth months we have given a good deal of information regarding Dakota. We propose to give much more.

We invite our readers in that Territory, also in Minnesota, in Iowa, Kansas, and Nebraska, and other Western States and Territories, to send us any information about their localities, of interest. Let it be very brief, however.

Tell us what land is worth per acre in your region, and what the inducements are for settlers. There is a good deal of Government land in some regions of the Far-West, which has not yet been settled. But such portions are growing rapidly in population; and those who wish to obtain a farm of Uncle Sam should not wait too long. The first to come are the best served.

If R. D. Buchanan, formerly of Saginaw, Mich., and for many years a subscriber of the *American Agriculturist*, will send his present address to us, he will confer a great favor upon his devoted daughter, Mrs. Alice Webster.

The Free Recipe Dodge Modified.

Inmann and a number of his followers advertised that they would send a recipe free. A "Medical Institute" in Boston simplifies matters by publishing the recipe in its advertisement. In this, as in those of the other style, care is taken to have in the prescription, or recipe, one or more articles not to be had at the drug stores, at least not by the names given. The "Institute," like all the others, proposes to send the stuff all put up for a consideration. It is the same old story, but a little differently told.

"A Disgrace to the Town."

The people of St. Stephen, in Mass Meeting assembled, have resolved that the Royal New Brunswick Lottery, so often exposed in these humbug columns, is a disgrace to their village, and have applied "to the Government of Canada to take steps to remove the lottery swindle existing in this town." We continue to receive from our subscribers the circulars of these swindlers that are still being scattered broadcast over the United States. After the sweeping exposures made from time to time, surely no reader of the *American Agriculturist* ought to be imposed upon by these scoundrels.

Various Land Companies

in Kansas, Texas, and other States in the far-West, offer lands to settlers on tempting terms. Some of these companies may be all right; others are known to be all wrong. Those who are tempted by these circulars, need not be in a hurry to invest. The land—if they have any—will remain there. Take time, and inquire of the Post-master nearest the alleged locality, as to the Company and the character of the land it offers. Some lands are not worth taking, even without cost. Postmasters have formerly done good service in exposing fraudulent land schemes.

The Spotted Pony Ranch.

The man at Leon Springs, Texas, still sends out his letters, in which he refuses to answer questions about his own business for less than a dollar for a small printed slip. Judging from the proprietor's own circulars, we would not advise any one to go to this ranch to learn the business of ranchero. He signs his name as B. H. Van Raub, and is said to be the same as Byron H. Robb, formerly concerned in various enterprises in Cincinnati, Ohio. Don Carlos is said to be another name for the same person.

No "Lock of Hair" Required.

We have known parties to advertise that they could treat diseases if only a lock of the patient's hair were sent to them. There is a quack in Ann Arbor, Mich., Kellogg by name, who does not even need the lock of hair. He can tell what is the matter just as well, if half a dollar is sent. If full name, age, place of residence, with fifty cents are enclosed in a letter, the sender "will receive by return mail a plainly written statement of his disease, with cost of treatment." The chap says, "It is not necessary that the patient be present to receive treatment," very likely not, we have no doubt that the farther away he is from this "Doctor," the better will it be for the patient.

Brahmo Yan.

Inquiries are still sent us concerning this alleged cure for deafness. One subscriber, Livingston County, N. Y., asks for our opinion of it. Our opinion has already been freely given, and to new subscribers who have not seen it, we would say, that we regard it as most heartless to offer to those afflicted with deafness, this stuff as a "specific." Admitting (which we do not) that this "Brahmo Yan" has any remedial powers in deafness, the affliction is due to so many causes, that any one remedy can touch but a small share of the curable cases. In some forms of deafness, relief by human aid is impossible, yet the sellers of this stuff make no distinction between curable and the incurable deafness. They wish to sell their "Brahmo Yan,"

Indignant at the Implication.

Mr. T. W. B., Alexandria, Va., would like to know what sort of people the proprietors of "Churchill's Remedies" are, as they seem to know more about his afflictions than he does himself. He writes us that they write him, "as you have not accepted our offer, etc.," Mr. B. writes us that this is the first he has heard of any "offer," and that he did not before know that he was afflicted with any disease. What right have these venders of nostrums to insult a stranger by implying that he is in need of their "Restorative" stuff? Have they any right to assume that one has led an improper life, by proposing with their miserable stuff to cure him of diseases, which he does not know even by name? Has one who has lived a quiet and cleanly life no rights which venders of quack medicines are bound to respect?

Counting Chickens Before They are Hatched.

Some two years ago we exposed the claims of one Bain, of Ohio, who represented himself to be the "North American Poultry Association." This Bain would teach how to make a "Common Sense Incubator" for $2, and would sell a Havana Recipe for preserving eggs, for some other sum. No one, as we showed at the time, could make a useful incubator from the directions, and the "Havana Recipe" was the old lime-water method, with some utterly useless articles added. During the past few months letters have appeared in papers in various parts of the country, purporting to be written by one L. L. Johnson, Fort Scott, Kans. These letters give most glowing accounts of his success with a "Common Sense Incubator," taking care to tell where to send $2, for directions for making it. This Johnson pursued his "regular business," whatever that may have been, and claimed that he could easily make $2,500 yearly from his incubator. As this was quite too good to be true, cautious persons wrote to said Johnson, asking for more definite particulars. The Postmaster at Fort Scott states that, like Sairy Gamp's Mrs. Harris, "There aint no sich pusson," and moreover, that "there never has been any such person as L. L. Johnson in this city." But Bain and his incubator have been thoroughly and gratuitously advertised. Who wrote the letter is not known, but there is no harm in guessing at its authorship.

Caught at Last! One Who Offers Bogus Money.

Circulars are continually sent us by our subscribers, issued by those who apparentiy offer counterfeit money. This is an old, one of the very oldest traps, but it can only catch those who are dishonestly inclined. An honest man cannot be tempted to touch counterfeit greenbacks, no matter how cheap they may be offered. Having this view of the matter, we for some time dropped this from our list of humbugs, feeling that, should any one get caught in the trap, the verdict of all honest men would be:

"SERVED HIM RIGHT."

We refer to the subject now to show how one of the rascals has been caught, and how our readers who receive similar propositions can aid in bringing the senders of them to justice. Mr. S. Schwartzchelder, Waterbury, Conn., received from one J. C. Stevens, of New York, a circular in which he offered in the usual tempting manner, his "greenleaf articles." Mr. Schwartzchelder consulted the Chief of Police of Waterbury, who corresponded with Mr. Anthony Comstock, inspector of the U. S. Post Office Department. Mr. C. advised that the correspondence with Stevens be continued, and at length some small real bank notes were sent as specimens of the "greenleaf articles" Mr. S. would furnish. The correspondence resulted in an appointment to meet Stevens at the Putnam House, in New York City. At the appointed time Stevens was at the rendezvous to conclude the sale, Schwartzchelder was on hand to exchange a little good money for much not so good. That each man might make sure of the other, the pass-words agreed upon had been exchanged, and all appeared lovely. Schwartzchelder was about to take the "greenleaf articles," but just then Inspector Comstock took Stevens, which essentially changed the aspect of affairs. Stevens was taken before U. S. Commissioner Shields, and having no $1,000 in good greenbacks at hand—the amount of bail—was sent to jail to await trial upon the charge of violating the law of Congress by using the U. S. Mails for fraudulent purposes.

Offering Bribes.—What Anthony Comstock says.

Louisiana and Kentucky still tolerate lotteries. These States not only allow tickets to be sold, but by granting charters so far give them legal sanction. Were the evil influences of these lotteries confined to the States which thus countenance them, they would be less objectionable. But the managers of these lotteries appear to think that a charter from the Legislature of their own State gives them the right to carry on their business in other States. Until quite recently, their flaring advertisements appeared in the few New York City papers that would publish them, and their offices for the sale of tickets were open upon the principal streets of the city.

THE THOUSANDS OF DOLLARS

daily taken in by these ticket-offices was not known, until the "Society for the Suppression of Vice" raided its principal office on Broadway, and seized its books, papers, and tickets. It was then found that the daily sale of tickets for twenty days previous to this seizure, reached the astonishing amount of $5,176 (five thousand one hundred and seventy-six dollars), each day! Besides this, the office received nearly two thousand letters daily. Who contributed this immense daily income to this Company? The "short accounts" of various bank and other officers, and the defalcations of trusted clerks in business houses, are a sufficient answer. It is a well established fact that the annual income of this Louisiana Lottery has been four millions of dollars! What wonder that it can pay big bonuses? The above mentioned breaking up of its principal New York office, was a severe blow to the Lottery Company. Its managers were sensible enough to know that nothing could be gained by fighting the Society which authorized it—What was its next move? A person who claimed to represent the Lottery Company, Mr. Anthony Comstock states to us, appeared at the office of the Society for the Suppression of Vice, and proposed to pay into its treasury annually the sum of

$25,000 IF ITS SECRETARY WOULD KEEP STILL.

Though the alleged bribe was not taken, the incident shows what "sinews of war" these people can control. But the others having right and law on their side, won the fight.

Some New and Practical Books.

American Cattle, by Lewis F. Allen. A new and revised edition. Orange Judd Company, New York. When this work first appeared as a treatise upon cattle in America, by an American author, who could speak from his own wide experience, it was at once accepted as a standard. There have since been works upon particular breeds, but none comprising all breeds, and treating of them in an exhaustive manner. In subsequent editions, its author, still active and enthusiastic in all that relates to improved agriculture, has kept his work abreast of the time. In the present revision, he has added whatever seemed necessary to maintain the work in the position accorded to it when it first appeared—the standard work upon American Cattle—or more concisely, Cattle in America. Price, post-paid, $2.50.

Ladies' Dogs as Companions, also a Guide to their Management in Health and Disease, with many stories, humerous and pathetic, from life. By. Dr. Gordon Stables, R. N. Dr. Stables, in his larger work, "Our Friend the Dog," noticed last month, has shown that he possesses two important qualifications as an author. A competent knowledge of his subject, and a most happy style in imparting that knowledge to others. The same characteristics are evident in the present work, which will prove most useful to the increasing number of ladies who choose dogs for their pets, and who are, from a mistaken sense of kindness, apt to spoil them by too much petting and coddling. The same vein of common sense that marks the larger work, runs through the present one, making it a useful guide. Fully illustrated. Supplied by Orange Judd Company. Price, post-paid, $1.50.

Quinby's New Bee-Keeping.—A new edition by its author, L. C. Root: Orange Judd Company, New York. The title of Mr. Quinby's first work was: "The Mysteries of Bee-Keeping Explained." In the editions which followed, this was simplified to "Quinby's New Bee-Keeping." Each successive edition embodied all the improvements that had been made since the previous one. Soon after the lamented death of Mr. Quinby, his business associate and relative, Mr. L. C. Root, prepared what was, practically, a new work, but with a modesty as rare as it is commendable, continued to call it "Quinby's New Bee-Keeping." In the belief that the great services of Mr. Quinby in simplifying the methods of the Apiary, and in popularizing improved bee-culture, entitled him to be thus commemorated, the title has been continued in subsequent editions. In the present, as in former editions, Mr. Root has added much new matter, and wherever the text required them, new illustrations have been introduced. In its present form it is a standard guide to Bee-keeping as now practised by American Apiarians, whose methods are far in advance of those followed in Europe. Abundantly illustrated. In press. Price, post-paid, $1.50.

Goats in California.—The Angora goat was introduced into California in 1848, and has been bred quite largely upon the common goat. An establishment for making gloves, robes, etc., uses thirty thousand goat skins per year. Other goat raising States of less importance are the Carolinas, Georgia, Kentucky, Tennessee, Texas, and Nevada.

Some Beans.—The United States and Territories produce annually over three million bushels of beans. More than one-third of these are grown in New York. The States next in order are California, Maine, Michigan, Missouri, and Wisconsin. Massachusetts with her famous "Boston baked beans" grows only about twenty-two thousand bushels.

Where to Get Hungarian Grass Seed.—Whenever we recommend a particular crop, we are sure to receive numerous inquiries as to where the seed can be procured. We wish our friends to understand, that, unless we state that a seed or a plant is only to be had of a particular dealer, that seed or that plant is to be procured of all the principal seedsmen and nurserymen in the country. The seed of Hungarian grass, as well as that of all leading grasses, is kept by the principal seedsmen. It is safe to send an order for seeds of any plant in general cultivation to any regular seedsman.

"Can You Tell Me Where to Get?" Many of our letters begin thus, and then follows the name of some seed. The postal card now before us asks us the question as to Rye Grass, and expects us to answer in the *American Agriculturist*, with the price. Our correspondents should bear in mind this fact: Seedsmen do business to make money, and if they do not have on hand an article that may be ordered, they will procure it, and thus retain a customer. There are numerous seedsmen among our advertisers, and it would not be treating all the others right, to say that any one of the number has a kind of seed that may be obtained from all the others.

Pioneer's Plan for a Rotation of Crops.—It takes from ten to fifteen years in a newly settled region for any rotation of crops to be established. The character of the soil, the wants of the settlers and the market, all determine what crops are to be grown. The farmer will naturally fall into some system of succession for his crops, but the more thought he gives to this subject at the outset, the better will be his future. We do not expect the exact methods of the English farmer on the newly broken prairie. This will come in time, when the virgin fertility is exhausted, and each farm has become a permanent, though small factor, in the national life. We will then need a rigid rotation, and it is well for every farmer, however new his land, to think of what is best for the future, in laying plans for the present. What will your own rotation be? Grass, corn, oats, wheat—does this arrangement best suit your conditions?

Would You Advise the Use of Incubators?—Whiteville Wine Company, Columbus County, N. C. The answer to this question will depend upon circumstances. If it is desired to produce a few dozen of chicks yearly, in order to keep up the usual farm flock, it is better to do it with the original incubator, the hen. If one is to make a business of poultry raising, whether the product is to be marketed as poultry or eggs, and chickens are wanted by hundreds, then it will pay to have an incubator—provided it can have constant and intelligent attention. Among the many incubators advertised, we have tried but one, and cannot say which is the best. Our correspondent will do well to send to the various makers for their descriptive circulars and study them carefully, before deciding which to buy. Many have an electric or other apparatus for the regulation of the heat, others have the heat regulated by the attendant.

VICTORIES

The **only** machine that received an award on both Horse-power and Thresher and Cleaner, at the Centennial Exhibition; was awarded the two last **Gold Medals** given by the New York State Agricultural Society on Horse-powers and Threshers; and is the **only** Thresher selected from the vast number built in the United States, for illustration and description in "Appleton's Cyclopedia of Applied Mechanics," recently published, thus adopting it as the **standard** machine of this country. Catalogue sent free. Address

UNEQUALED

HIRAM HARDER, Cobleskill, Schoharie Co., N. Y.

SIR ROBERT CHRISTISON,

BARONET, M.D., D.C.L., LL.D., F.R.S., Physician to Her Majesty the Queen, President Royal British Association, Professor at the University of Edinburgh, etc., says:

"The properties of this wonderful plant (the Coca) are the most remarkable of any known to the medical world. From repeated personal trials, I am convinced that its use is highly beneficial and tonic."

PROFESSOR DUNCAN CAMPBELL, M. D., LL. D., F. R. S., President Royal College of Physicians and Surgeons, Member General Council University of Edinburgh, etc., etc., says: "Liebig Co.'s Coca Beef Tonic has more than realized my expectations."

PROFESSOR JOHN M. CARNOCHAN, M. D., Surgeon-in-Chief New York State Hospitals, Professor Surgery New York Medical College, ex-Health Officer, Port of New York, etc., says: "My patients derived marked and decided benefit from the Liebig Co.'s Coca Beef Tonic."

PROFESSOR F. W. HUNT, M. D., LL. D., Honorary Member Imperial Medical Society St. Petersburg, Russia, Professor of Practice of Medicine, etc., etc., says: "Liebig Co.'s Coca Beef Tonic is far superior to the fashionable and illusive preparation of beef, wine and iron."

PROFESSOR H. GOULLON, M. D., LL. D., Physician to the Grand Duke of Saxony, Knight of the Iron Cross, etc., etc., says: "It gives more tonic than anything I have ever prescribed."

It is invaluable in Dyspepsia, Biliousness, and Liver Affections.

PROFESSOR C. A. BRYCE, M. D., LL. D., editor *Southern Clinic*, says: "Really a wonderful reconstructive agent, building up the system and supplying lost nervous energy. For broken-down constitutions, it is *the* agent."

PROFESSOR H. R. BENNETT, of Fitchburg, President Massachusetts Surgical Society, says: "The best tonic to build up a broken-down constitution from long-standing womb disease is Liebig Co.'s Coca Beef Tonic." It is invaluable in all forms of debility, nervous affections, nervous and sick headaches, and catarrh.

For indorsements and opinions of hundreds of the most distinguished physicians, irrespective of school, see our circulars.

Liebig Co.'s Coca Beef Tonic is also valuable in Malaria, Fever and Ague, Chronic Coughs, Kidney Affections, Asthma, Female Irregularity and Sufferings, Palpitation and Weakness of the Heart, Scrofulous Eruptions, Infirmities of Old Age, etc.

The *American Homœopathic Observer* says:
"Liebig Co.'s Coca Beef Tonic certainly merits all the praise it is receiving."

The St. Louis *Clinical Review* says:
"We desire to call the attention of the profession to the reliability of the preparations manufactured by the Liebig Company, and to the high character of the indorsements accorded to this celebrated firm by leading physicians and medical journals of all schools."

The *American Homœopathic Observer* says:
"The Liebig Co.'s preparations should not be confounded with any patent nostrums. They are legitimate pharmaceutical products, and worthy of the recommendations bestowed upon them by both homœopathic and allopathic journals."

PROFESSOR J. C. LEHARDY, M. D., President State Medical Society of Georgia, Member Athenee Royal de Bruxelles, etc., etc., says: "The results obtained by me from its use in my practice are indeed flattering."

It embodies the nutritive elements of the muscular fibre, blood, bone and brain of carefully selected healthy bullocks, dissolved in a guaranteed quality of sherry, and combined with the Coca (which is recognized as the most powerful tonic now known) and other valuable invigorating ingredients. It will reconstruct the most shattered and enfeebled, reinvigorate the aged and infirm, and infuse new vitality into sickly children and infants.

PROFESSOR WILLIAM C. RICHARDSON, M. D., Dean of St. Louis, Mo., Clinic of Midwifery and Diseases of Women and Children, says: "To children with marasmus I have given it with decided benefit. It is a remedy of great utility in Dyspepsia. It is also a most powerful and agreeable stimulant to the brain and nervous system, and it is especially useful to counteract fatigue of mind and body."

DR. TUTHILL MASSEY, M. D., L. R. C. P., M. B. H. S., of Manchester, England, says: "The effect is something wonderful. From being depressed and very low spirited, easily tired, I can now walk any length of time without feeling fatigue. Before taking the Coca Beef Tonic my nerves seemed so unstrung that when I read a pathetic tale I could not refrain from becoming very much affected, although I tried hard to overcome the absurd feeling. Now I am myself again.

TO THE LIEBIG COMPANY: DEDHAM, MS.
Gentlemen—Your agent left me a bottle of your Coca Beef Tonic. I took it myself, as I had been sick a number of months with a lung affection, and was not able to practice. It helped me very much. So much so that I am now about as well as usual. I have since given it to a number of patients, and it has benefited every case. I am indeed most thankful that it came to my hands. I had tried different preparations of Coca before, but had no effects from them.
H. S. PHENIX, M. D.

PROFESSOR C. H. WILKINSON, Editor *Medical and Surgical Record*, says: "The Coca Beef Tonic of the Liebig Company, combined as it is with Coca, quinine and iron, forms a most valuable adjunct to the practice of medicine. From the experience we have had with it, we are forced to speak in its favor and to recommend its use. Beef, iron and quinine, cannot be surpassed by any other three ingredients in or out of the dispensatory for invigorating an enfeebled system, and when such remedies can be obtained combined from so reliable a house as Liebig's, it behooves the profession to patronize the same to the fullest extent."

From an article on the Coca by W. S. Searle, A. M., M. D., of Brooklyn, Fellow of Medico-Chirurgical Society of New York, etc.:
It is a useful tonic in nervous prostration, hysteria and melancholy. In sustaining nervous force it is superior to all known agents. I have advised its use to a large number and variety of persons for various conditions, and the great majority have found benefit from its employment. To a sufferer from nervous dyspepsia, a lady seventy-three years of age, who had been reduced to a diet of lightly cooked meal and bread, and who for three years had not had a movement of the bowels without the aid of enemas, I prescribed it. Within three days she was able to return to ordinary food, and though two years have passed, she has not failed to have a regular and normal evacuation daily. A lady who had for years suffered from nervous asthma, and who had been compelled to go up stairs slowly and with frequent rests, found great relief from the very first dose. A broker who had been subjected to excessive nervous strain, and was in consequence unable to sleep or eat well, was becoming weak and emaciated. He greatly feared he would be obliged to relinquish business for a period of entire rest. All his symptoms were immediately cured, and he went on with his affairs as usual. A lady, aged fifty-five, has diabetes. Since taking Coca with her meals she has improved wonderfully, being almost entirely relieved of her former "sinking spells," thirst and constipation. A lady suffered for thirteen years with severe nervous headaches. They at first recurred every three weeks, and finally every two days. She describes them as so violent that she would rather die than live. Three weeks after beginning the Coca she reports: "I have had but one slight attack, and I am so much stronger and better that I feel sure I shall be cured." Many instances of nervous headache, neurasthena and neuralgia have been reported to me as cured by the Coca when all the usual narcotics, tonics and anodynes have failed to afford relief.

132 HENRY STREET, BROOKLYN.
TO THE LIEBIG COMPANY:
Your preparation of Coca is the best I have ever seen.
W. S. SEARLE, M. D.

WHAT IS COCA?

The first reply is that IT IS NOT COCOA.

COMMODORE GIBBON (United States Exploring Expedition of the Amazon) says: "The Coca has properties so marvellous that it enables the Indians, without any other nourishment the while, to perform forced marches of five or six days. It is so bracing, stimulant and tonic, that by the use of it alone they will perform journeys of 300 miles without appearing in the least fatigued."

PROFESSOR J. J. VAN TSHUDI ("Travels in Peru") says: "Setting aside all extravagant and visionary notices, I am clearly of the opinion that the use of Coca is very conducive to health and longevity. In support of this conclusion, I may refer to the numerous examples of longevity among Indians, who, from boyhood, have been in the habit of masticating Coca three times a day. Cases are not unfrequent of Indians attaining the great age of 120 years, and these men, at the ordinary rate of consumption, must, in the course of their lives, have chewed not less than 2,700 pounds of the leaf, and retained the most perfect health and vigor."

I tried Liebig Co.'s Coca Beef Tonic in a number of cases of chronic dyspepsia where the assimilation of food was very defective and there was steady loss of weight. The results obtained in two weeks were, indeed, flattering. One patient gained five pounds, another three pounds, and so on.
J. C. LEHARDY, M. D., Savannah,
President Med. Society of Georgia, etc., etc.

PREPARED ONLY BY THE
LIEBIG LABORATORY AND CHEMICAL WORKS CO.,
NEW YORK DEPOT, 38 MURRAY ST.

50 **Chromo Cards,** no 2 alike, with name, and six Latest Songs, 10 cents.
J. S. PARDEE, 411 7th ave., N. Y.

DON'T you want a **$30**, 28 Shot Repeating Rifle for **$15**, a **$30** Breech Loading Shot Gun for **$16**, a **$12** Concert Organette for **$7**, a **$25** Magic Lantern for **$12.00**, articles FREE, if you can get any of these New American Diction- **YOU** get up a club for the ary. Send **$1.00** for a sample copy and try it. If you have a Lantern you can start a business that may pay you from **$10** to **$50** every night. Send at once for our Illustrated Catalogue of Watches, Self-cocking Revolvers, Spy Glasses, Telescopes, Telegraph Instruments, Organ Accordeons, Violins, &c. It may start you on the road to rapid wealth. **WANT**

WORLD MANUFACTURING CO.,
122 Nassau Street, New York.

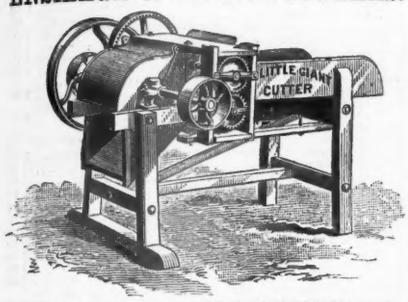
DAIRY GOODS.
We make, from the best material, superior articles of Dairy Goods that are models of strength and simplicity. **Rectangular Churns, Lever Butter Workers, Factory Churns and Power Workers.** 2 gold and 14 silver medals awarded for superiority. One Churn at wholesale where we have no agent. Write for prices. All goods warranted.
CORNISH, CURTIS & GREENE,
Fort Atkinson, Wis.

SPAIN'S CHURNS.
(See cut).
ALSO,
STAR CHURNS.
Rapid I. C. Freezers,
Improved Tree-Tubs.
Send for Descriptive Circulars and Prices.
CLEMENT & DUNBAR,
Philadelphia, Pa.

We will send you a watch or chain **BY MAIL OR EXPRESS,** C. O. D., to be examined before paying any money and if not satisfactory, returned at our expense. We manufacture all our watches and save you 30 per cent. Catalogue of 250 styles free. EVERY WATCH WARRANTED. Address
STANDARD AMERICAN WATCH CO.,
PITTSBURGH, PA.

BLAINE Agents wanted for authentic edition of his life. Published at Augusta, his home. Largest, handsomest, cheapest, best. By the renowned historian and biographer, Col. Conwell, whose life of Garfield, published by us, outsold the twenty others by 60,000. Outsells every book ever published in this world; many agents are selling fifty daily. Agents are making fortunes. All new beginners successful; grand chance for them; $43.50 made by a lady agent the first day. Terms most liberal. Particulars free. Better send 25 cents for postage, etc., on free outfit, now ready, including large prospectus book, and save valuable time.
ALLEN & CO., Augusta, Maine.

THE ROSS ENSILAGE & FODDER CUTTERS.



These Cutters are guaranteed to be the best in the world. Any one wishing to buy a cutter, is at liberty to try one of ours in competition with any other make in the world before buying, and if it does not prove superior in every way, it may be returned. We guarantee perfect satisfaction or **no sale.** Please send for our Illustrated Circular before you buy a Cutter. Our new and valuable book on Ensilage and Silos is now ready, and will be sent **free** to any address upon application. **E. W. ROSS & CO.,**

☞Mention this paper. **Fulton, N. Y.**

THE UNION HORSE-POWER

Has the Largest Track Wheels. DOUBLE GEARED. No Rods, Chilled Bearings and LEVEL TREAD

Union Thresher Separator and Cleaner, Premium Farm Grist Mill, Feed Cutters, etc. ☞Write for Descriptive Catalogue **FREE.**
W. L. BOYER & BRO., Philadelphia, Pa.

Star Cane Mill

GRINDS twice as fast. Double the capacity. CHEAPEST mill made. WARRANTED in every respect. We manufacture ten different styles of Cane Mills and a full stock of Sugar Makers' Supplies, and

STUBBS' EVAPORATOR.

Has greater capacity. Saves half the labor. A boy can operate it. Saves fuel. Syrup made on it brings a higher price in market. Don't fail to investigate its merits before ordering. Send for circular to

J. A. FIELD & CO.,

EIGHTH AND HOWARD STS., ST. LOUIS, MO., U. S. A.

SUGAR MILLS

Eighty Sizes, for Hand, Animal, Steam and Water Power.

The Best. The Cheapest

Thousands in use throughout the Tropical World and by all the leading Sorghum growers of the West, Catalogues and Prices, and Prof's. WEBER & SCOVILLS Northern CANE MANUAL sent free by **GEO. L. SQUIER,**
Buffalo, N. Y.

HAVERFORD COLLEGE, PA., 9 MILES from Philadelphia, on the Penna. R. R. THOMAS CHASE, LL.D., President. Under care of Members of Society of Friends, but open to others. Classical and Scientific courses. Thorough instruction, ample equipment. Practice in Astronomical Observatory, Chemical Laboratory and Machine Shop. Complete Gymnasium. Library 14,000 volumes. Beautiful grounds; healthful location in the country. Next half-year begins 9th month (September) 17th, 1884. Address PROF. ISAAC SHARPLESS, Dean, Haverford College P. O., Pa.

FOR SALE,

—OR—

RENT TO PARTIES WITH CAPITAL,

360 ACRES OF GOOD LAND,

24 miles south of St. Louis on I.M.R.R. Station (Glenwood) on the land. Well adapted for dairy purposes. All under fence. Four houses and barns. Stream of spring water runs through the place. Also for sale the stock and farming implements. Twenty fine Jerseys, forty sheep, Cotswolds and Merinos, five brood sows, seven colts, etc.
WM. N. MORRISON, 1401 Washington Av., St Louis, Mo.
When writing mention this paper.

MAGIC LANTERNS!

AND STEREOPTICONS

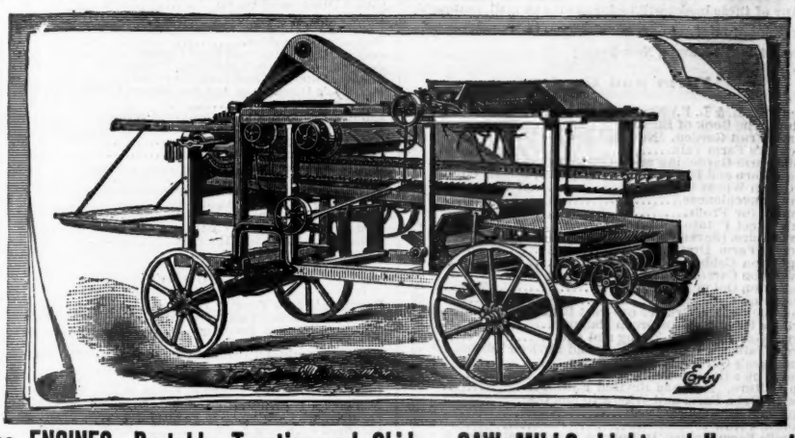
For Public, Sunday School and Home Exhibitions.

Views Illustrating all Subjects | 120 page Illus. Catalogue, FREE

C. T. MILLIGAN, 728 Chestnut St., PHILADELPHIA.

The "NEW MASSILLON" Thresher

ALWAYS IN THE LEAD.



IMPROVED FOR 1884.

Also ENGINES, Portable, Traction and Skid. SAW MILLS, Light and Heavy, etc.

For full description send for our 1884 Catalogue, just out. Sent free to all interested. Name this paper, Address

RUSSELL & CO., Massillon, O.

FRUIT TREES. ORNAMENTAL TREES. GRAPE VINES. PLANTS AND BULBS. SMALL FRUITS. SHRUBS AND ROSES.

An immense stock. Splendid Assortment. Warranted true, Remarkably cheap—**40 CHOICE $1 SETS.** Send for Catalogue free. 30th year. 500 Acres. 21 Greenhouses. Address

THE STORRS & HARRISON CO., Painesville, Lake Co., Ohio.

THE BRADLEY

REAPERS, MOWERS AND RAKES.

Send for Illustrated CATALOGUE

AGENTS WANTED in unoccupied Territory.

BOSTON, 32 S. Market St. } **BRADLEY & CO.**
New York, 22 College Place. } **SYRACUSE, N. Y.**

Tribune and Farmer,

Established 14 years ago.

THE GREAT AGRICULTURAL WEEKLY OF THE WORLD, DEVOTED TO THE

FARM, SHOP, AND FIRESIDE.

Cheapest, ablest, most practical Agricultural and Family Journal published. Edited by a corps of experienced writers, who know just what they are talking about. Every number fully illustrated.

The Company publishing the "Tribune and Farmer" take great pleasure in informing the public that they have now completed arrangements whereby they are enabled, while keeping the price of the "Tribune and Farmer" at the low price of $1.00 per year, to furnish a mass of original reading, alike interesting and valuable to the Farm, Shop, and Fireside. **Especial attention** given to the Produce, Live-Stock, and Wool Markets. New departments will be added from time to time. We are determined to maintain for the "Tribune and Farmer" the lead that it has attained over all weekly publications of a similar class.

SUBSCRIBE NOW—Only $1.00 per year; 50 cents **six** months; 25 cents three months.

Sample copies free. Address,

TRIBUNE AND FARMER,
20 Rose St., New York City.

PATENTS. Attorney's fee contingent on Success. Address **E. H. GELSTON & CO., Washington, D. C.**

Martin Amber Wheat.

This new variety has again proven its superiority over older varieties by its enormous yield. Fine quality of Grain and Flour, and the fact, that with ordinary cultivation it only requires ½ Bushel of Seed to produce 25 to 40 bushels per acre. The Martin Wheat originated in this locality. Circular free. Address,
J. L. DILLON, Seedsman and Florist, Bloomsburg, Pa.

Pleasant Greetings.

APPIN, ONT., June 5, 1884.
I think it is the best agricultural paper in the world.
HENRY MURRAY.

NATIONAL, IOWA, June 19.
It is valuable to me indeed; my farm shows it.
J. T. HAMPTON.

SYKESVILLE, MD., June 2, 1884.
It (the *American Agriculturist*) is a wise and most safe investment.
J. B. BARLOW.

FAIRBANKS, IND., June 9, 1884.
The *American Agriculturist* is excellent, my father was a subscriber before me, as early as 1859.
GEO. H. HEIMER.

OSGOOD, Ind., June 11.
You have the best Agricultural Journal published.
W. T. GOODEN, Editor "Journal."

BEND, TEXAS, May 30, 1884.
I do like the paper; it improves all the time. The hints and suggestions are a great help in a new country like this, where agriculture is in its infancy.
M. S. GRISCOM.

CROTON LANDING, N. Y., June 10, 1884.
Allow me to say that your *American Agriculturist* Miscroscope is a splendid little gem of great practical utility. Its benefit to the Farmer and Gardener are incalculable. I would not be without it for a dozen times its cost. It has enabled me to detect the minute germs that develop the ravaging insects, which I arrested in time by destroying them by syringe, thus saving currant, rose-bushes, etc. Every Farmer and Gardener should possess one. It seems to me that it must come into general use.
G. STEVENSON.

Replete with useful information and suggestions.—*Baltimore Shipping List.*

Well packed with valuable illustrated suggestions. Its Humbug Department is very serviceable.—*The Huntsville* (Ala.) *Item.*

The July number is brimful of instructive, seasonable articles, made more interesting and valuable by one hundred original illustrations.—*Swift Co.* (Minn.) *Press.*

In all respects a model paper.—*Council Grove Republic*, Council Grove, Kans.

The *American Agriculturist* for July is filled with timely and well prepared matter from the pens of thirty-two of the most noted agricultural writers in the country. Standing at the head of agricultural journals for forty years it propsses to yield first place to none.—*New Castle* (Pa.) *Courant.*

STANDARD RURAL BOOKS.

[Any of these books will be forwarded by mail, *post-paid*, on receipt of price. Address Publishers of *American Agriculturist*, 751 Broadway, New York.]

Farm and Garden.

Allen's (R. L. & L. F.) New American Farm Book. ...$2 50
Bailey's The Book of Ensilage..... 1 00
Barry's Fruit Garden. New and Revised Edition..... 2 50
Brackett's Farm Talk.....paper, 50 cts.; cloth 75
Brill's Farm-Gardening and Seed-Growing..... 1 00
Broom-Corn and Brooms.....paper, 50 cts.; cloth 75
Curtiss on Wheat Culture..... 50
Farm Conveniences..... 1 50
Farming for Profit..... 3 75
Fitz's Sweet Potato Culture.....Paper. 40
Flax Culture. [Seven Prize Essays by practical growers.] 30
French's Farm Drainage..... 1 50
Gregory on Cabbages..... 30
Gregory on Carrots, Mangold Wurtzels, etc..... 30
Gregory on Onion Raising..... 30
Gregory on Squashes..... 30
Hand-Book of the Grasses of Great Britain & America. 1 50
Harlan's Farming with Green Manures..... 1 00
Harris' Gardening for Young and Old..... 1 25
Harris' Talks on Manures. New and Revised Edition.. 1 75
Henderson's Gardening for Pleasure..... 1 50
Henderson's Gardening for Profit..... 1 50
Hop Culture. New and Revised Edition..... 30
How to Get a Farm and Where to find One..... 1 00
Johnson's How Crops Feed..... 2 00
Johnson's How Crops Grow..... 2 00
Leland's Farm Homes, In-Doors & Out-Doors. New Ed. 1 50
Nichols' Chemistry of the Farm and Sea..... 1 25
Oemler's Truck-Farming at the South..... 1 50
Onions—How to Raise them Profitably..... 20
Our Farm of Four Acres.....paper., 30c.; cloth.. 60
Quinn's Money in the Garden..... 1 50
Register of Rural Affairs, bound, 9 vols., each..... 1 50
Riley's Potato Pests.....paper, 50 cts.; cloth.. 75
Roe's Play and Profit in my Garden..... 1 50
Schenck's Gardener's Text-Book..... 75
Silos and Ensilage..... 50
Starr's Farm Echoes..... 1 00
Stewart's Irrigation for the Farm, Garden, and Orchard 1 50
Ten Acres Enough..... 1 00
The Soil of the Farm..... 1 00
Thomas's Farm Implements and Machinery..... 1 50
Tim Bunker Papers; or, Yankee Farming..... 1 50
Tobacco Culture. By fourteen experienced cultivators. 25
Todd's Young Farmers' Manual. 3 vols..... 4 50
Waring's Book of the Farm..... 2 00
Warington's Chemistry of the Farm..... 1 00
White's Gardening for the South..... 2 00

Fruits and Flowers.

American Rose Culturist..... 30
American Weeds and Useful Plants..... 1 75
Breck's New Book of Flowers..... 1 75
Chorlton's Grape-Grower's Guide..... 75
Downing's Fruits and Fruit Trees of America. New ed. 5 00
Elliott's Hand-book for Fruit Growers.....pa., 60c.; clo. 1 00
Fern Book for Everybody..... 50
Flowers and the Flower Garden; boards..... 50
Fuller's Grape Culturist..... 1 50
Fuller's Illustrated Strawberry Culturist..... 20
Fuller's Small Fruit Culturist. New Edition..... 1 50
Fulton's Peach Culture. New and revised edition..... 1 50
Heinrich's Window Flower Garden..... 75
Henderson's Hand Book of Plants..... 3 00
Henderson's Practical Floriculture. (New&Enlar'dEd.) 1 50
Husmann's American Grape Growing & Wine Making.. 1 50
Johnson's Winter Greeneries at Home..... 1 00
Mohr on the Grape-Vine..... 1 00
My Vineyard at Lakeview..... 1 25
Orchard and Fruit Garden; boards..... 50
Parsons on the Rose..... 1 50
Phin's Open Air Grape Culture..... 1 00
Quinn's Pear Culture for Profit. New and Revised Ed. 1 00
Rivers's Miniature Fruit Garden..... 1 00
Robinson's Ferns in their Homes and Ours..... 1 50
Roe's Success with Small Fruits..... 1 00
The Thomery System of Grape Culture..... 50
Thomas's American Fruit Culturist. New Ed..... 3 00
Vick's Flower and Vegetable Garden..paper, 50c.; clo. 1 00
White's Cranberry Culture..... 1 25

Horses.

Armatage's Every Man His Own Horse Doctor. 8vo... 7 50
Bancher's New Method of Horsemanship..... 1 00
Bruce's Stud Book. 3 vols.....25 00
Dadd's American Reformed Horse Book, 8vo, cloth... 2 50
Dadd's Modern Horse Doctor, 12mo..... 1 50
Delisser's Horseman's Guide.....boards. 75c.; cloth.. 1 00
Durant's Horseback Riding from Medical Point of View. 1 25
Dwyer's Horse Book..... 1 25
Every Horse Owner's Cyclopædia..... 3 75
Famous American Race Horses..... 75
Famous American Trotting Horses..... 75
Famous Horses of America..... 1 50
Flower's Bits and Bearing Reins..... 50
Going's Veterinary Dictionary..... 2 00
Heim's American Roadsters..... 5 00
Herbert's Hints to Horse-Keepers..... 1 75
Horses and Hounds..... 80
Horse Owner's and Stableman's Companion..... 1 50
Jennings' Horse Training Made Easy..... 1 25
Jennings on the Horse and his Diseases..... 1 75
Law's Farmers' Veterinary Adviser..... 3 00
Mayhew's Illustrated Horse Doctor..... 3 00
Mayhew's Illustrated Horse Management..... 3 00
McClure's American Gentleman's Stable Guide..... 1 00
Miles on the Horse's Foot..... 75
Percheron Horse..... 1 00
Rarey and Knowlson's Complete Horse Tamer..... 50
Riley on the Mule..... 1 50
Stewart's American Farmer's Horse Book..... 3 00
Stonehenge on the Horse in Stable & Field. Eng.Ed.8vo. 3 50
Stonehenge on the Horse in Stable&Field, Am.Ed.12mo. 2 00
The Horse, How to Buy and Sell..... 1 00
The Horse: Its Varieties and Management; boards.... 75
The Saddle-Horse..... 1 00
Wallace's American Stud-Book. Vol. 1.....10 00
Wallace's American Trotting Register. Vols. 1 & 2....20 00
Woodruff's Trotting Horse of America..... 2 50
Youatt and Skinner on the Horse..... 1 75
Youatt and Spooner on the Horse..... 1 50

Cattle, Sheep, and Swine.

Allen's (L. F.) American Cattle. New and Revised Ed. 2 50
Allen's (R. L.) Diseases of Domestic Animals..... 1 00
Armatage's Every Man His Own Cattle Doctor. 8vo... 7 50
Coburn's Swine Husbandry. New and Revised Edit'n. 1 75
Dadd's American Cattle Doctor, 8vo, cloth..... 2 50
Guenon on Milch Cows..... 1 00
Harris on the Pig..... 1 50
Keeping One Cow..... 1 00
Stewart's Shepherd's Manual. (New & Enlarged Ed.).. 1 50
Cattle: The Varieties, Breeding and Management... 75
Clok's Diseases of Sheep..... 1 25
Dadd's American Cattle Doctor, 12mo..... 1 50
Fleming's Veterinary Obstetrics..... 6 00
Hayes' Angora Goat..... 1 50
Jennings on Cattle and their Diseases..... 1 75
Jennings on Sheep, Swine, and Poultry..... 1 75
Jersey, Alderney, and Guernsey Cow..... 1 50
McClure's Diseases of the Am. Horse, Cattle & Sheep.. 2 00
Miles' Stock Breeding..... 1 50
Quincy (Hon. Josiah) on Soiling Cattle..... 1 25
Randall's Fine Wool Sheep Husbandry..... 1 00
Randall's Practical Shepherd..... 2 00
Randall's Sheep Husbandry..... 1 50
Reasor on the Hog..... 1 50
Sidney on the Pig..... 50
The Sheep: Its Varieties and Management; boards.... 75
Thompson's Food of Animals..... 1 00
Waring's Essay on Jersey Cattle..... 50
Youatt and Martin on Cattle..... 1 50
Youatt and Martin on the Hog..... 1 00
Youatt on Sheep..... 1 00

Poultry.

Burnham's New Poultry Book..... 1 50
Corbett's Poultry Yard and Market.....Paper. 50
Geyelin's Poultry-Breeding..... 1 25
Gray's The Game Fowl..... 1 50
Halsted's Artificial Incubation and Incubators...paper. 75
Lewis' Practical Poultry Book..... 1 50
Miner's Domestic Poultry Book..... 1 00
Poultry: Breeding, Rearing, Feeding, etc; boards..... 50
Renwick's Thermostatic Incubator...paper, 35c.; cloth 56
Standard of Excellence in Poultry..... 1 00
Stoddard's An Egg Farm.....paper, 50 cts.; cloth 75
Tegetmeier's Poultry Book..... 9 00
Wright's Brahma Fowl..... 2 50
Wright's Illus. Book of Poultry. Cl. 12.50; Half Morocco. 17 50
Wright's Practical Pigeon Keeper..... 1 50
Wright's Practical Poultry-Keeper..... 2 00

Architecture and Landscape Gardening.

Allen's (L. F.) Rural Architecture..... 1 50
Ames' Alphabets..... 1 50
Ames' Compendium of Penmanship..... 5 00
Atwood's Country and Suburban Houses..... 1 50
Barn Plans and Out-Buildings..... 1 50
Bicknell's Cottage and Villa Architecture..... 4 00
Bicknell's Detail Cottage & Constructive Architecture. 6 00
Bicknell's Modern Architectural Designs and Details..10 00
Bicknell's Public Buildings. New..... 2 50
Bicknell's School-House and Church Architecture..... 2 50
Bicknell's Stables, Out-buildings, Fences, etc..... 2 50
Bicknell's Street, Store, and Bank Fronts. New..... 2 50
Bicknell's Village Builder and Supplement..... .....10 00
Burns' Architectural Drawing Book..... 1 00
Burns' Illustrated Drawing Book..... 1 00
Burns' Ornamental Drawing Book..... 1 00
Cameron's Plasterer's Manual..... 75
Camp's How Can I Learn Architecture..... 50
Copley's Plain and Ornamental Alphabets..... 3 00
Croff's Progressive American Architecture..... 6 00
Cummings' Architectural Details..... 6 00
Downing's Landscape Gardening..... 6 50
Elliott's Hand-Book of Practical Landscape Gardening. 1 50
Eveleth's School House Architecture..... 4 00
Gardner's Common Sense in Church Building..... 1 00
Gould's American Stair-Builder's Guide..... 3 00
Gould's Carpenter's and Builder's Assistant..... 2 50
Harney's Barns, Out-Buildings and Fences..... 4 00
Holly's Carpenters' and Joiners' Hand-Book..... 75
Hulme's Mathematical Drawing Instruments..... 1 50
Hussey's Home Building..... 2 50
Hussey's National Cottage Architecture..... 4 00
Interiors and Interior Details..... 7 50
Jacques' Manual of the Garden, Farm, and Barn-Yard. 1 50
Jacques' Manual of the House..... 1 00
Lakey's Village and Country Houses..... 5 00
Leuchar's How to Build Hot-Houses..... 1 50
Modern House Painting..... 5 00
Monckton's National Carpenter and Joiner..... 5 00
Monckton's National Stair-Builder..... 5 00
Palliser's American Cottage Homes..... 3 00
Palliser's Model Homes..... 1 00
Palliser's Useful Details..... 2 00
Phinn's Workshop Companion..... 35
Plummer's Carpenters' and Builders' Guide..... 75
Powell's Foundations and Foundation Walls..... 1 50
Reed's Cottage Houses..... 1 25
Reed's House Plans for Everybody..... 1 50
Riddell's Carpenter and Joiner Modernized..... 7 50
Riddell's New Elements of Hand Railing..... 7 00
Riddell's Lessons on Hand Railing for Learners..... 5 00
Riddell's The Artisan..... 5 00
Rural Church Architecture..... 4 00
Tuthill's Practical Lessons in Architectural Drawing. 2 50
Weldenmann's Beautifying Country Homes. A superb quarto volume. 24 lithograph plates, in colors 10 00
Wheeler's Homes for the People..... 2 00
Wheeler's Rural Homes..... 1 50
Withers' Church Architecture..... 10 00
Woodward's Cottages and Farm Houses..... 1 00
Woodward's Country Homes..... 1 00
Woodward's Graperies and Horticultural Buildings.... 1 00
Woodward's National Architect. Vols. 1 & 2..... 15 00
Woodward's Suburban and Country Houses..... 1 00
Woollett's Old Homes Made New..... 1 50
Woollett's Villas and Cottages..... 3 00

Field Sports and Amusements.

Amateur Trapper and Trap Makers' Guide..pa.,50c.; bds. 75
Angling: Trolling, Spinning, Bottom and Fly Fishing. 50
Archer, The Modern..... 2 50
Archery, Witchery of..... 1 50
Athletic Sports for Boys.....bds. 75c.; cloth.. 1 00
Barber's Crack Shot..... 1 25
Batty's Practical Taxidermy and Home Decoration.... 1 50
Batty's How to Hunt and Trap. New and enlarged Ed. 1 50
Bird Keeping..Fully Illustrated..... 1 50
Bogardus' Field, Cover, & Trap Shooting..... 2 00
Breech-loaders. By Gloan..... 1 25
Breech-loader, Modern, Greener..... 2 50
Burges' American Kennel and Sporting Field 3 50
Butler on the Dog..... 2 00
Camp Cookery, Parlor..... 50
Camps and Tramps in the Adirondacks..... 1 25
Canoe and Camera. Square 12mo..... 1 50
Dead Shot; or, Sportsman's Complete Guide..... 1 25
Dinks, Mayhew, and Hutchinson, on the Dog..... 3 00
Dog, by Hill..... 2 00
Dog, The: Its Varieties and Management; boards..... 50
Dog, The, by Idstone..... 1 25
Dogs, by Richardson.....paper, 30 cts.; cloth.. 60
Dogs, by Stables..... 75
Dogs of Great Britain, America, and other Countries.. 2 00
Dogs, Scale of Points in Judging..... 50
Every Boy's Book of Sports..... 3 50
Fishing in America..... 2 50
Floyd's Hints on Dog Breaking..... 50
Frank Forester's Life and Writings. New. In 2 Volumes. Each Vol. complete in itself. Price per vol. 1 50
Frank Forester's American Game in its Season..... 1 50
Frank Forester's Field Sports. 2 vols..... 4 00
Frank Forester's Fish and Fishing..... 3 00
Frank Forester's Manual for Young Sportsmen..... 1 00
Frazar's Practical Boat Sailing..... 1 00
Fur, Fin, and Feather..... 50
"Fysshe and Fysshynge." Dame Juliana Berners, 1496. 1 00
Gildersleeve's Rifles and Marksmanship..... 1 50
Gun, Rod, and Saddle..... 1 00
Hallock's Camp Life in Florida..... 1 50
Hallock's Dog Fanciers' Directory..... 75
Hallock's Fishing Tourist..... 2 00
Hallock's Sportsman's Gazetteer. New, Revised, and Enlarged Edition..... 3 00
Harris' Scientific Angler..... 1 50
Hooper's Dog and Gun.....paper, 30c; cloth.... 60
How to Camp Out, Gould.....oil-cloth, 75 cts; cloth.. 1 00
How to Use the Pistol..... 50
Hunter and Trapper..... 75
King's Trouting on the Brule River..... 1 50
Lewis' American Sportsman..... 1 75
Long's American Wild Fowl Shooting..... 2 00
Minot's Land and Game Birds of New England..... 3 00
Murphy's American Game Bird Shooting..... 2 00
Norris' American Angler..... 5 50
On the Wing, Bumsted..... 1 50
Practical Hints on Rifle Practice with Military Arms.. 50
Roosevelt's Florida, and Game Birds of the North. New and Revised Edition..... 2 00
Roosevelt's Game Fish of the North. New & rev. Ed.. 2 00
Roosevelt's Superior Fishing. New and Rev. Edition.. 2 00
Roosevelt & Green's Fish Hatching and Fish Catching. 1 50
Schley's American Partridge and Pheasant Shooting.. 2 00
Shooting on the Wing..... 75
Stables, Our Friend, the Dog..... 3 00
Stonehenge, Dogs, British Islands: New edition..... 7 50
Stonehenge Encyclopædia of Rural Sports..... 7 50
Stonehenge, Every Horse Owner's Cyclopædia..... 3 75
Stonehenge on the Dog..... 3 75
Stonehenge on the Horse. Eng. ed., 8vo..... 3 50
Stonehenge on the Horse. Am. ed., 12mo..... 2 00
The Archery..... 75
The Sailing Boat..... 50
Wingate's Manual for Rifle Practice..... 1 50

Miscellaneous.

American Bird Fancier. Enlarged Edition..... 30
American Ornithology (Wilson & Bonaparte)..... 7 50
Ames' Compendium of Penmanship..... 5 00
Bailey's Our Own Birds of the United States..... 1 25
Bommer's Method of Making Manures..... 25
Book of Household Pets.....paper, 50c.: cloth.. 75
Boussingault's Rural Economy..... 1 00
Brown's Taxidermist's Manual..... 1 00
Canary Birds. New and Revised Ed. Paper, 50c.; cloth. 75
Collection of Ornaments..... 2 00
Common Sea Weeds..... 50
Common Shells of the Sea Shore..... 50
Cooking Manual (Miss Juliet Corson)..... 50
Cooking School Text Book. (Miss Juliet Corson).... 1 25
Cook's Manual of the Apiary..... 1 25
Dana's Muck Manual..... 1 25
De Voe's Market Assistant..... 2 50
Downing's Rural Essays..... 3 00
Dow's Plain Facts about Florida..... 25
Dwyer's Immigrant Builder..... 1 50
Dussauce on the Manufacture of Vinegar..... 5 00
Eassie's Wood and its Uses..... 1 50
Eggleston's End of the World..... 1 50
Eggleston's Hoosier School-Master..... 1 25
Eggleston's Mystery of Metropolisville..... 1 50
Eggleston's Hoosier School Boy..... 1 00
Felker's What Grocers Sell Us: Manual for Buyers... 1 00
Fisher's Grain Tables..... 40
Food from the Far West..... 1 50
Fowler's Twenty Years of Inside Life in Wall Street.. 1 50
Fuller's Forest-Tree Culturist..... 1 00
Fuller's Practical Forestry..... 1 50
Gardner's Carriage Painters' Manual..... 1 00
Gardner's How to Paint..... 1 00
Grant's Beet Root Sugar..... 1 25
Grimshaw on Saws..... 2 50
Half Hour Recreations in Popular Science. 2 vols..... 5 00
Harris's Insects Injurious to Vegetation.....Plain $4; Colored Engravings..... 6 50
Hazard's Butter and Butter Making..... 25
Hedges' Sugar Cane and their Products..... 1 00
Holden's Book of Birds.....paper, 25c.; cloth.. 50
Holly's Art of Saw Filing..... 75
Home Cook-Book..... 1 50
Hoopes' Book of Evergreens..... 3 00
Household Conveniences..... 1 50
House-keeping in Old Virginia..... 1 75
How to Make Candy..... 50
John Andross (Rebecca Harding Davis)..... 1 50
Johnston's Agricultural Chemistry..... 1 75
King's Beekeepers' Text Book..paper, 75c.....cloth..... 1 00
Langstroth on the Honey-Bee..... 2 00
Lyman's Cotton Culture..... 1 50
Menhaden: Its Uses, etc.; Goode & Atwater..... 2 00
Mrs. Cornelius's Young Housekeeper's Friend..... 1 25
Mrs. Elliott's Housewife. New and Revised Edition. 1 25
Murrey's Valuable Cooking Receipts. Paper 35c.; cloth 75
Norris' American Fish Culture..... 1 75
Norton's Scientific Agriculture..... 75
Our Farmer's Account Book..... 1 00
Pabor's Colorado as an Agricultural State..... 1 50
Packard's Guide to Study of Insects..... 5 00
Packard's Half-hours with Insects..... 2 50
Packard's Our Common Insects..... 1 50
Painter, Gilder, and Varnisher..... 1 50
Pedder's Land Measurer..... 60
Phin's How to Use the Microscope..... 1 00
Phin's Lightning Rods and their Construction..... 50
Porter on the Sugar Cane..... 1 50
Practical Rabbit Keeper..... 1 50
Pretty Mrs. Gaston (J. Esten Cooke)..... 1 50
Quinby's New Bee-Keeping. New and Revised Edition. 1 50
Riley's Locust Plague..... 1 25
Ropp's Commercial Calculator..... 1 00
Root's A B C of Bee-Culture..... 1 25
Scribner's Lumber and Log-Book..... 25
Slack's Trout Culture..... 1 00
Stewart's Sorghum and its Products..... 1 50
Texas; the Coming Empire..... 1 50
The Angora Goat..... 1 50
The Complete Home..... 2 75
The Modern Fencer..... 50
The Modern Gymnast..... 50
Treat's Injurious Insects of the Farm and Garden..... 2 00
Twenty-five Cent Dinners, New Ed. (Miss Juliet Corson) 25
Ville's Artificial Manures..... 6 00
Warder's Hedges and Evergreens..... 1 50
Ware's The Sugar Beet..... 4 00
Waring's Draining for Profit and Health..... 1 00
Waring's Elements of Agriculture..... 1 00
Waring's Sanitary Condition in City & Country Houses 50
Waring's Sanitary Drainage of Houses and Towns..... 2 00
Willard's Practical Butter Book..... 1 00
Willard's Practical Dairy Husbandry..... 2 00
Woodward's Artistic Drawing Studies..... 6 00
Woodward's Ornamental and Fancy Alphabets..... 2 50
Youatt on the Dog..... 2 50

THE COLDEST COLD WATER DIP

Is not Poisonous or Corrosive. Warranted to cure SCAB. Mixes perfectly with COLD WATER. Safe to use in WEATHER. It is a sure cure for all Skin Diseases, Insect Pests, and Worms of domestic animals. For Sheep, leaves the wool like silk. Every farmer should keep it. In the Household, destroys all bad smells. No infectious malady can exist where this Dip is employed as a Disinfectant. For its various uses in detail, and prices, send postage stamp to

T. W. LAWFORD, Gen'l Agent,
296 E. Chase St., Baltimore, Md.

University of the State of New York.

American Veterinary College.

141 West 54th St. NEW YORK CITY.

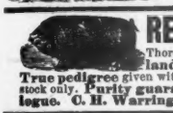
The only institution in the State having the power to grant the degree of Doctor of Veterinary Surgery (D.V.S.). The annual session of this Institution begins in October of each year. Catalogues and announcements can be had from the Dean of the Faculty. **A. LIAUTARD, M.D.V.S., Dean of the Faculty.**

Pure bred recorded Poland China Swine. Pigs all ages for sale, in pairs or trios, not akin. Write for what you want. Enclose stamp for new catalogue. *Reduced rates by express.*
JOHN B. HOWE, Seneca, Ills.

Mention this paper.

2806 Lbs. W'ght Of Two OHIO **IMPROVED CHESTER HOGS.** Send for description of this famous breed, **Also Fowls.** *L. B. SILVER. CLEVELAND, O.*

Chester White, Berkshire and Poland China Pigs, Fine Setter Dogs, Scotch Collies and Fox Hounds, bred and for sale by A. PEOPLES & CO., West Chester, Chester Co., Pa. Send stamp for Circular and Price List.



REGISTERED SWINE

Thorough-bred **Chester Whites, Poland-Chinas,** & Imported **Berkshires** True pedigree given with every animal sold. Strong, healthy stock only. **Purity guaranteed.** Send stamp for new **Catalogue. C. H. Warrington,** Box 624, **West Chester, Pa.**

HERD-BOOK **Guernsey and Jersey Cattle.** Also thorough-bred and grade **Guernseys** and **Jerseys.** Lincoln, Southdown, and Hampshiredown Sheep a **specialty. Chester White, Berkshire, Yorkshire,** and **Poland-China Pigs.** Scotch Collie Shepherd Dogs and a variety of Poultry. Come see our stock and select for yourselves. Send stamp for circular and prices.

WALTER & SONS, West Chester, Chester Co., Pa.

D.M. MAGIE COMPANY, OXFORD, BUTLER CO., OHIO, Originator and Headquarters for Magie or Poland-China Swine. 751 head sold for breeders in 1883. Have shipped stock to Seven Foreign Countries. Send for Circulars.

POULTRY WORLD.

A monthly magazine, the oldest, largest, and best periodical devoted entirely to poultry ever published. Splendidly illustrated. $1.25 per year. Also the *American Poultry Yard*, the only weekly paper devoted entirely to poultry in existence. $1.50 per year. Both papers for $2.00. A sample copy of both mailed on receipt of nine cents in postage stamps.

Address H. H. STODDARD, HARTFORD, CT.

THE NEW CENTENNIAL

INCUBATOR.

Improved for 1884. Better than ever. The handsomest, simplest, most durable and **best** machine in the market. No electricity or clock-work. Perfectly self-regulating. Send 2c-stamp for circular to A. M. HALSTED, Box 10, Rye, N. Y.

Halsted's Book on "*Incubation and Incubators*," 135 Pages. Over 100 Illustrations. 75 cents by mail.

INCUBATORS The **SAVIDGE** is the **BEST.** Holds **100** eggs, **$25.** Different sizes. It **never fails**—warranted. C. W. SAVIDGE, 2534 Huntingdon St., Phila.

A book devoted entirely to PLYMOUTH ROCK fowls, also a separate book on WHITE LEGHORNS, another on BROWN LEGHORNS, a book on curing POULTRY DISEASES, and another entitled HOW TO FEED FOWLS. Either of the above mailed for 25 cts., or all five for $1.00. Address the author

H. H. STODDARD, Hartford, Ct.

FOR SALE. At Knockalva, Ramble P. O., Jamaica, W. I., 4 Thoroughbred Maltese Asses. Several Thoroughbred Maltese Jennies. For further particulars, apply to J. W. EDWARDS, at above address.

Send for Catalogue and Prices.

ATLAS ENGINE WORKS
INDIANAPOLIS, IND., U. S. A.
MANUFACTURERS OF
STEAM ENGINES & BOILERS.
Carry Engines and Boilers in Stock for Immediate delivery.

Hampshire Down Sheep.

WILTSHIRE, ENGLAND.

NOTICE OF DISPERSAL of the PREMIER HAMPSHIRE DOWN BREEDING FLOCK of GREAT BRITAIN—Specimens from which have Won upwards of 120 PRIZES, including, CHAMPION and FIRST, SECOND and THIRD *Class* PRIZES at the great MEETINGS of the ROYAL, BATH AND WEST OF ENGLAND, ROYAL COUNTIES, SMITHFIELD CLUB and other AGRICULTURAL SHOWS in the UNITED KINGDOM and on the CONTINENT.

Messrs. WATERS and RAWLENCE

ARE instructed by ALFRED MORRISON, ESQ., to SELL by AUCTION at FONTHILL, WILTSHIRE, ENGLAND, on the 30th JULY and 8th of AUGUST, 1884, the whole of his

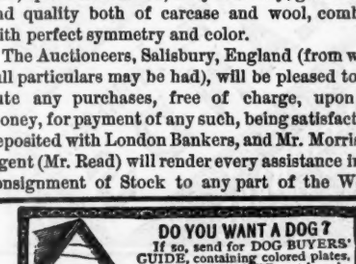
WORLD-RENOWNED AND SUPERB

HAMPSHIRE DOWN BREEDING FLOCK,

Consisting of about 1,400 very choice *Two-teeth*, *Four-teeth*, *Six-teeth*, and *Full-mouthed* EWES, 350 EWE LAMBS, and 150 grand RAM LAMBS and SHEARLING RAMS.

Hampshire Down Sheep are now so widely recognized as the *breed of the day*, that the Auctioneers need hardly point out their highest characteristics, so essential to Flockmasters, viz., hardy constitution, aptitude to fatten, early maturity, great weight and quality both of carcase and wool, combined with perfect symmetry and color.

The Auctioneers, Salisbury, England (from whom full particulars may be had), will be pleased to execute any purchases, free of charge, upon the money, for payment of any such, being satisfactorily deposited with London Bankers, and Mr. Morrison's Agent (Mr. Read) will render every assistance in the consignment of Stock to any part of the World.



DO YOU WANT A DOG?

If so, send for DOG BUYERS' GUIDE, containing colored plates, 100 engravings of different breeds, prices they are worth, and where to buy them. Also, cuts of Dog Furnishing Goods of all kinds. Directions for Training Dogs and Breeding Ferrets. Mailed for 10 cts.

PHILADELPHIA KENNELS,
837 S. 8th St. Phila'a.

Remedies
FOR
Horse Diseases

Going's Worm Destroyer.—Sure Relief from Worms or Bots.

Going's Tonic Powder.—The Best Preparation Known for Improving the Horse's Condition, Purifying the Blood, and Imparting to its Coat a Glossy, Shining Appearance.

Going's Colic Powder.—For Colic, Scouring (Chronic or Acute), or Inflammation of the Bowels. The Surest Remedy known to Veterinary Science.

Going's Cough Powder.—For Cough, Catarrh, Heaves, or Sore Throat.

Prominent Agencies.—Portland, Me., James Bailey & Co.; Boston, Mass., G. C. Goodwin & Co., 38 Hanover St.; Providence, R. I., T. W. Rounds & Co., 101 N. Main St.; Worcester, Mass., R. McAleer, 228 Main St.; Philadelphia, Pa., M. Gallagher, 19 N. Ninth St.; Pittsburgh, Pa., Loughrey & Frew, 102 Wood St.; Baltimore, Md., Coleman & Rogers, 176 Baltimore St.; Baltimore, Md., Wm. C. Rupp, 11 Park St.; Richmond, Va., S. S. Cottrell & Co., 1,303 Main St.; Wilson, N. C., E. M. Nadal & Co.; Louisville, Ky., R. A. Robinson & Co., 228 Main St.; St. Louis, Mo., A. A. Meilier, 709 Washington Ave.; New Orleans, La., A. W. Jackson, 873 Magazine St.; Cleveland, O., Dr. F. S. Slosson, 223 Superior St.; Detroit, Mich., Geo. E. McCulley and J. A. Taylor; Chicago, Ill., Van Schaack, Stevenson & Co.; Chicago, Ill., S. Taylor & Co., 181 E. Madison St.; St. Paul, Minn., Noyes Bros. & Cutler; Helena, Mont., R. S. Hale & Co.; Boise City, Idaho, Wm. H. Nye; San Francisco, Cal., Main & Winchester, 214 Battery St.

These remedies are each put up in tin boxes, and will keep for an indefinite period. They will be sent by mail, free of charge, on receipt of **$1** per package. Circulars with full directions enclosed. Address,

PROF. J. A. GOING, P. O. Box 938, New York City.

TRIUMPH ENGINE.

Especially adapted for purposes requiring light power. Wrought iron boilers—**tested, inspected and insured payable to the purchaser.** Guaranteed as represented. Ready to run as soon as received.

3	HORSE POWER,	$250.00.
5	" "	300.00.
7	" "	375.00.
10	" "	600.00.

Write to

Paige Mf'g Co.,
340 and 342 State Street, PAINESVILLE, O.

Bookwalter Engine.

Especially adapted for Dairies, Creameries, and Farm purposes. Can be used for years without any repairs. Some 3,000 in actual use. Not one ever exploded. Can be run by any one of ordinary intelligence. Every Engine complete, ready to use as soon as received. No Engine built so good and so low in price.

3	Horse-Power....	$240.00
4½	" "	280.00
6½	" "	355.00
8½	" "	440.00

Illustrated Catalogues Free.

JAMES LEFFEL & CO.,
110 Liberty St., New York City, or **Springfield, Ohio.**

Address, TAYLOR MFG. CO.
(Please Mention this Paper.) Chambersburg, Pa.

Iron Levers, Steel Bearings, Brass **TARE BEAM. JONES, HE PAYS THE FREIGHT.** Sold on trial. Warrants 5 years. All sizes as low. For free book, address

JONES OF BINGHAMTON,
BINGHAMTON, N. Y.

Spray Your Fruit Trees
WITH
Field's Orchard Force Pump
THE FARMERS' FRIEND.

Positively the Cheapest and the Best. All Sizes and Kinds of Iron Pumps. You can save money by purchasing your pumps from us. Send for Catalogue.

FIELD FORCE PUMP CO.,
Lockport, N. Y.

QUAKER CITY

Double Reduction Grinding Mill. For Corn and Cob, Feed and Table Meal.

Send for Circular.

A. W. STRAUB & CO.,
Philadelphia, Pa.

For New England and New York, address
110 John St., New York City

CIDER

Presses, Graters, Elevators, &c.

BOOMER & BOSCHERT PRESS CO., Syracuse, N. Y.

THE BEST CATTLE FASTENING!

SMITH'S SELF-ADJUSTING SWING STANCHION!

THE only Practical Swing Stanchion Invented. Thousands in use. Illustrated circular free. Manufactured by C. D. BROOKS, Addison, Steuben Co., N. Y.

THE GREAT AMERICAN TEA COMPANY

GOOD NEWS TO LADIES!

Now's your time to get up Orders for our CELEBRATED TEAS and COFFEES, and secure a beautiful MOSS ROSE or GOLD-BAND CHINA TEA-SET (44 pieces), our own importation. One of these beautiful china sets given away to the party sending an order for $25. This is the greatest inducement ever offered. Send in your orders and enjoy a cup of GOOD TEA or COFFEE, and at the same time procure a HANDSOME CHINA TEA-SET. No humbug. Good Teas, 30c., 35., and 40c. per lb. Excellent Teas, 50c. and 60c., and very best from 65c. to 90c. We are the oldest and largest Tea Company in the business. The reputation of our house requires no comment. We have just imported some very fine WHITE GRANITE DINNER SETS, (115 pieces), which we give away with Tea and Coffee orders of $40 and upwards. For full particulars,

Address THE GREAT AMERICAN TEA CO.

P. O. Box 289. 31 and 33 Vesey St., New York.

MIXED FARMING

IN NEBRASKA.

Grain, Corn, and Live Stock Growing Combined.

The most Profitable and agreeable of any occupation.

1883

Reports prove the agriculturists of Nebraska to have been the most successful of any people in the West.

Write for information about the above matters—also about U. P. Ry. lands in this State, which will be sent Free, in great variety, by LEAVITT BURNHAM,

Land Commissioner U. P. Ry. Co.,

Omaha, Neb.

☞ Refer to this advertisement.

NORTHERN PACIFIC R. R.

LANDS In Minnesota, North Dakota, Montana, Idaho, Washington, and Oregon.

The Northern Pacific country is the newest region open for settlement, BUT THE RICHEST IN NATURAL RESOURCES. Its exceptionally fertile soil, well watered surface, fine wheat and farming lands, best of cattle grounds, large bodies of timber, rich mining districts, healthful climate, great navigable waters, and grand commercial opportunities are the chief attractions which invite a large population.

NOTE 10,818,433 acres or MORE THAN HALF of all the Public Lands disposed of in 1883 were in the Northern Pacific country. Send for maps and publications describing the railroad lands and the country. They are sent FREE.

Address CHAS. B. LAMBORN,

Land Com'r, St. Paul, Minn.

160 MARYLAND FARMS, in Tracts from 30 to 300 acres.

Near railroad and navigable salt water (with all its luxuries) in Talbot Co., Md. Climate mild and healthy. Titles good. 1884 Pamphlet and Map, showing *location*, free.

Address C. E. SHANAHAN, Atty, Easton, Md.

CALIFORNIA. Full description by counties; 200-page pamphlet and map; price 50 cents, postage paid.

McAFEE BROTHERS, Land Agents,

234 Montgomery St., San Francisco, Cal.

MARYLAND FARMS, for Fruit, Grain, and Grass, on Salt water, $20 to $50 per acre. Catalogues free. ISLER & MEEKINS, Cambridge, Md.

FARMS. 150 Delaware Fruit and Grain Farms cheap. Catalogues free.

A. P. GRIFFITH, Smyrna, Del.

A Profitable Investment!

Each $5 doubled within 30 days, and loss rendered impossible.

A NEW CITY BEAUTIFULLY LOCATED.

Hinsdale City, adjoining beautiful Garden City — the "loveliest village of the plain"—and Creedmoor Rifle Range, N. Y. Several thousand building lots, surrounding Hinsdale depot, $185 each, selling on monthly payments of $5 per lot; four lots, $10 per month. Prices advanced $5 per lot monthly until present prices are at least doubled. Cottages $10 monthly for each $1,000 of cost. Nuisances and shanties prohibited; no malaria, chills, fevers or mosquitoes; climate, soil, drives and surroundings unsurpassed. Building optional with purchaser; fair dealing guaranteed; nothing over-colored. Buy for investment, residence or Summer home. New York will be

THE FUTURE CITY OF THE WORLD.

Property around it is rapidly increasing in value, and must continue to do so. You enter no uncertain venture by investing in Hinsdale. Prices are low compared with all other New York surroundings; increase certain; prospective value greater than any property equi-distant. Hinsdale is 12 miles from New York—35 minutes by rail, and 5 minutes additional by Brooklyn Bridge or Ferry; and the commutation averages 10 cents per trip. It is on the main line of the Long Island Railroad, and is the junction for both Garden City and Creedmoor Rifle Range. Improvements proposed, etc., will render Hinsdale an attractive place of abode. Agents wanted of either sex. Circulars, etc., of

E. WILSON, Attorney, 335 Broadway, New York.

RED RIVER VALLEY LANDS

A FARM

$80 DOWN $6667 IN SIX ANNUAL PAYMENTS 7 PER CENT INTEREST WILL BUY 160 ACRES.

A SPECIAL OFFER To Actual Settlers

open only between the 1st day of March and the 31st day of Dec., 1884.

The lands included in this offer are the most productive and, considering locality, the cheapest of any unoccupied lands in the United States now open for sale. First applicants will have first chance. Home seekers "catch on."

☞ For Maps, Illustrated Papers

FOR $3 PER ACRE

SALES WILL BE MADE IN LOTS OF NOT LESS THAN 160 ACRES NOR MORE THAN 320 ACRES. THE TERMS ARE BETTER THAN CAN BE OBTAINED FROM THE GOVERNMENT.

and other information regarding these lands,

Write to J. B. POWER,

Land and Immigration Commissioner,

St. Paul, Minneapolis & Manitoba R'y,

ST. PAUL, MINN.

MIXED FARMING, DAIRYING, COMPETING RAILWAYS, SCHOOLS, CHURCHES, VILLAGES.

$5 TO $8 PER ACRE

SOUTH WEST MINNESOTA LANDS

5 TO 8 HOURS FROM ST. PAUL

J. H. DRAKE LAND COMMR. ST. PAUL MINN.

700000 ACRES

IT PAYS AGENTS to sell our RUBBER Stamps. FOLJAMBE & Co., Cleveland, O.

PATENTS Hand-Book FREE. R. S. & A. P. LACEY, Patent Att'vs, Washington, D. C.

THE

CHICKERING PIANO

"IS THE BEST IN THE WORLD."

The Chickerings have always led in the march of improvement in Piano making. Hence their various styles of

GRAND, SQUARE, and UPRIGHT

Pianos have rapidly grown in public estimation, as is evinced by the number of Chickering Pianos sold since the foundation of the house, which already exceeds

SIXTY-EIGHT THOUSAND.

The highest musical authorities in all lands indorse the Chickering Piano.

Write for their new Illustrated Catalogue.

CHICKERING & SONS,

WAREROOMS:

130 Fifth Avenue, NEW YORK. | 152 Tremont St., BOSTON.

BLAINE AGENTS WANTED!

Complete, Reliable Illustrated Life of the PEOPLE'S CHOICE. Get the BEST. Special terms to agents ordering from a distance. Outfit free to actual canvassers. Write for circulars.

LOGAN

I also have ready prospectus of the forthcoming humorous book "MY WIFE'S FOOL OF A HUSBAND." 175 illustrations by Williams. The HIT OF THE YEAR!

W. H. THOMPSON, Pub., 404 Arch St., Phila., Pa.

Lives of Democratic Nominees in preparation. This will appear but once. Answer now.

Books on Hygiene, Physical Culture, Sociology, Government of Children, etc.

THE HERALD OF HEALTH. Monthly. $1 per year. HYGIENE OF THE BRAIN AND THE CURE OF NERVOUSNESS. By M. L. Holbrook, M. D. $1.50.

EATING FOR STRENGTH. By M. L. Holbrook, M. D. $1.

LIVER COMPLAINT, MENTAL DYSPEPSIA, AND HEADACHE. Their Cure by Home Treatment. By M. L. Holbrook, M. D. $1. Be sure and get our Catalogue. Sample of Herald of Health free.

M. L. Holbrook, Nos. 13 and 15 Laight Street, N. Y.

FOR 10 CENTS.

The *St. Louis Magazine*, edited by Alexander N. De Ménil, now in its fifteenth year, is brilliantly illustrated, purely Western in make-up, replete with stories, poems, timely reading and humor, $1.50 a year. Sample copy and a set of gold colored picture cards sent for ten cents. Address, A. J. GILMORE, 213 North Eighth Street, St. Louis. THE AMERICAN AGRICULTURIST and ST. LOUIS MAGAZINE, sent one year for $1.75.

AGENTS WANTED for the new book "OUR FAMOUS WOMEN." *Just completed by Elizabeth Stuart Phelps, Marion Harland,* and 18 other Eminent Writers. *The grandest book of the age.* ☞ Agents sell 10 to 20 a day. Send for Circulars. *Extra Terms.* Specimen Plate, etc., to A. D. WORTHINGTON & CO., Hartford, Conn.

CARDS & KNIFE FREE!

50 different designs Birds, Swiss Floral, Ivy Wreath, Gold Panel, Sentiment, Oval Embossed, Summer, Winter, Moonlight & Marine scenes, all in beautiful colors on superfine enameled board with your name in fancy type 10c. 11 pks and this beautiful Pearl Handle 4-bladed Knife (for lady or gent) $1.00 By getting 10 of your friends to send with you, you obtain an elegant knife and a lovely pack of cards FREE.

DAXTON PRINTING CO., Wallingford, Conn.

ELEGANT pack of 50 Floral Beauties, Mottoes, Verses, &c., name on, 10c. 10 pks. & Silver Napkin Ring or Ag'ts' Sample Book, $1.00. TODD & Co., Clintonville, Conn.

THIS SOLID GOLD BAND RING, warranted Solid Gold or money refunded, in an elegant velvet-lined casket, a case of samples of our Beautiful Cards, and our new Illustrated Premium List with agt's terms, &c., all sent post-paid for 45c., 3 for $1.25. Offer made to secure new agents for 1884. We will print your name in new type on 50 Beauties, 50 all new Chromos, 10c, 11 packs for $1.00, and the above ring FREE to sender of club. New Sample Book 25c. post-paid. CAPITOL CARD CO., HARTFORD, CONN.

50 Large, New, Embossed border Chromo Cards, all gold, silver, motto and hand, name on, 10c., 13 pks. $1. Agts' latest samples, 10 cts. L. JONES & CO., Nassau, N. Y.

50 New Style Chromos, EVERY CARD EMBOSSED. Moss Rose, Bird Mottoes, Hand Mottoes, Golden Beauties, &c., name on, 10c. Ætna Ptg. Co., Northford, Ct.

PRESSES, TYPE, CHROMO CARDS, Scrap Pictures, &c. Send for price lists. E. C. DUNN & CO., 2106 Orkney St., Philadelphia, Pa.

ESTABLISHED 1864. NO PATENT! NO PAY!

PATENTS obtained for Mechanical Devices, Compounds, Designs and Labels. All preliminary examinations as to patentability of inventions free. Our "Guide for Obtaining Patents" is sent free everywhere.

Address LOUIS BAGGER & CO., Solicitors of Patents, WASHINGTON, D. C.

American Agriculturist

SUBSCRIPTION TERMS.

(**English** and **German** Edition at same Rates.)

For *One* or *Two* Subscriptions, *One Year*, the price will hereafter be (post-free) **$1.50** each, instead of $1.60.

[ALL POST FREE.]

Three Subscribers one year.....**$4**, or **$1.33** each
Four Subscribers one year.....**$5**, or **$1.25** each.
Five Subscribers one year.....**$6**, or **$1.20** each.
Six Subscribers one year.....**$7**, or **$1.17** each.
Seven Subscribers one year.....**$8**, or **$1.14** each.
Eight Subscribers one year.....**$9**, or **$1.12** each.

Ten or more Subscribers, post-free, Only $1 each.

[A free copy to sender of club of 20 at $1 each.]

ADVERTISING RATES.

American Agriculturist.

ENGLISH EDITION.

Ordinary Pages, **$1.00** *per line* (agate), each insertion.
Last Page, and Third Cover Page, **$1.25** *per line.*
Second Cover Page—**$1.50** per line.
Page next to Reading and Last Cover Page—**$2.00** per line.
No advertisement taken for less than **$3.00** each insertion.
Fourteen agate lines make one inch.

GERMAN EDITION.

Ordinary Pages, **10** cents per line, each insertion.
Second Cover Page, **15** cents per line.
Page next to Reading and Last Cover Page, **20** cts. per line.
No advertisement taken for less than **$1.00** each insertion.
☞ No Advertisement of Medicines or Humbugs received.
Address all orders to

AMERICAN AGRICULTURIST,

751 Broadway, New York.